DOCUMENT RESUME

ED 275 631 SP 028 161

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TITLE Bits & Bytes of Dental Health. Teaching Dental Health in the Classroom.
INSTITUTION Utah State Dept. of Health, Salt Lake City. Family Services Div.
PUB DATE [86]
NOTE 142p.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC06 Plus Postage.
DESCRIPTORS Curriculum Development; *Dental Health; Dentistry; Elementary Education; *Health Education; Hygiene; *Learning Activities; Physical Health

ABSTRACT

Instructional activities in this manual are designed for integration into the existing curriculum framework for health education. The activities are organized in sections corresponding to major topics. Each section begins with background information intended to provide content background for the teacher. Each activity includes a curriculum framework reference, a title, intended grade level, and a materials/preparation section. The procedure for each activity includes a brief description of the instructional methods employed. The following major topics are covered: (1) the mouth; (2) organisms in the mouth; (3) tooth development; (4) tooth decay; (5) preventing decay problems; (6) preventing periodontal diseases; (7) smokeless tobacco; (8) malocclusions; (9) accidents; (10) dental history; and (11) dental professionals. The appendices provide a glossary, a curriculum framework, and a list of activities by grade, indexed to the main body of the document. (JD)

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BITS & BYTES OF DENTAL HEALTH

TEACHING DENTAL HEALTH IN THE CLASSROOM

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Preface

Bits and Bytes of Dental Health is an interdisciplinary, dental health education program designed to accompany the Utah State Health Core. The primary audience for these materials is teachers of kindergarten through grade six students. The materials have been developed on the premise that young people, their parents, and teachers have a common interest in good health.

The primary goal of Bits and Bytes of Dental Health is to assist learners in grades K-6 in developing awareness, knowledge, skills, and attitudes that will result in informed decisions, responsible behavior, and constructive action with respect to dental health. This goal is approached by providing the teacher with some basic background information and a few suggested learning activities, organized into a curriculum framework relating each activity to a specific program topic and objective.

The three-ring binder format allows the teacher to copy individual pages for classroom use, and provides the opportunity for periodic updating and expansion of the materials. Teachers are encouraged to adapt these activities freely to meet their particular needs and to submit their own ideas and materials to the Dental Health Bureau for consideration, 44 Medical Drive, Salt Lake City, UT 84113.

Bits and Bytes of Dental Health is a joint project of the Utah Department of Health and Utah State University. Dr. Donald R. Daugs, Department of Elementary Education, Utah State University, and Calvert F. Cazier, Utah Department of Health, served as primary authors of the materials. An advisory board helped formulate plans for the publication and assisted in reviewing the materials. Teachers in various school districts field tested the materials and provided valuable feedback for revisions. Other reviewers included Karen L. Zinner, Peggy A. Bowman, RDH, and Sheri Judd, RDH, of the Utah Department of Health.

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How To Use This Book

As a Supplement to Existing Courses

Instructional activities within Bits and Bytes of Dental Health are designed for easy integration into the existing curriculum framework for health education. Teachers may use this text to satisfy all dental health related standards in the health core. The materials in this book go beyond minimum competencies and provide interesting and enriching experiences for all grade levels.

Organization of the Materials

Because these materials are supplementary--designed for integration into existing health education curricula—teachers may pick and choose from the activities. Generally, activities are designed to stand alone, however, they may be assembled into series of activities or even units. There is no need to do all activities for a given grade level, and they are not presented in the book so that you would start with the first activity and proceed through the book.

The activities are organized in sections corresponding to major topics and are keyed to a curriculum framework. By looking at the Table of Contents, or reading the Curriculum Framework, you can see the conceptual development--from getting familiar with the mouth to professional awareness.

Organization of Each Topic

Each section begins with Background Information. The background information is intended to provide content background for the teacher. This is not intended to be exhaustive, but rather only to provide some knowledge for the teacher. In some cases activities will refer the teacher back to the content section.

Each activity includes a curriculum framework reference, a title, intended grade level, and a materials/preparation section. The materials for the activity have purposely been kept simple and inexpensive.

The procedure for each activity includes a brief description of the instructional methods employed. For most activities, there are also extensions that go beyond the basic activity.

Appendices

The Appendices include a glossary of terms for use by the instructor, a complete listing of the Curriculum Framework, and a cross-reference by grade level and topic.

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Topic 1.1: The Mouth

Program Goal 1.Ø: To provide a general understanding of what may be found in the mouth.

Background Information

The mouth is the beginning of that long passageway through the body called the digestive tract. It can be thought of as a hinged box bounded on the top by the hard palate, in the back by the soft palate, on the sides by the stretchy cheeks, and on the bottom by the tongue. The lips form the front of the box and provide the opening into the box.

The mouth is lined with cells that are similar to skin cells but are not as strong as skin cells. They do contain nerve endings that respond to heat, pain, pressure, and temperature just as skin cells do. The mouth is the only part of the digestive system that is so equipped.

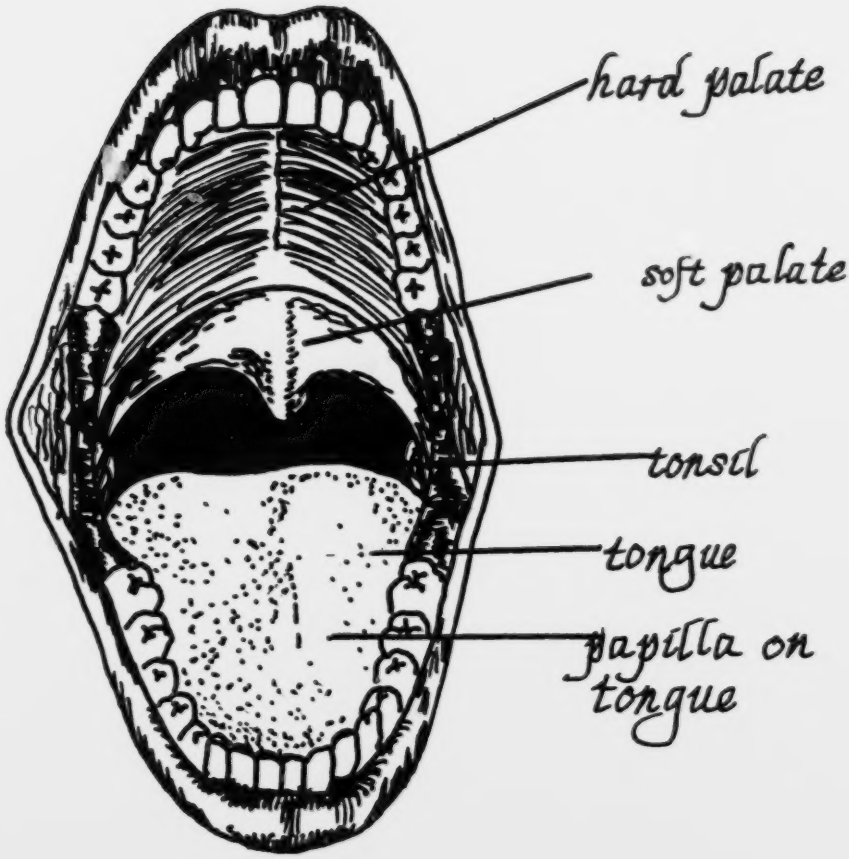
The mouth opens at the back into the pharynx, a region shared by both the respiratory and digestive systems.

The tongue is needed for speech, aids in swallowing, and contains nerve endings that provide the sense of taste. This bundle of muscles can be moved in many directions. Close examination of the tongue will reveal many small projections, called papillae. The taste buds are concentrated in these papillae.

Teeth aid in speech and are the primary agents used to break food into smaller pieces. This process, called mastication, is important as it increases the surface area of food particles. As a result of tooth action, digestive juices can act on the food more efficiently.

The process of mastication is helped by saliva which is formed and secreted by the salivary glands. Saliva softens and lubricates the food mass so that food can be more easily chewed and swallowed. It also dissolves some of the food so that it can be tasted. Saliva also initiates chemical digestion by changing starch to sugar. The wetting action of saliva aids in speech. Have you ever tried talking with a dry mouth? Saliva also helps wash the teeth and neutralize mouth acid, thus protecting the tooth enamel from the dissolving action of natural acids.

Figure 1. The mouth cavity



A TOOTH FOR EVERY OCCASION

1.11 The student will describe the functions of the major parts of the mouth.

Grade Level: K-2

Materials/Preparation:

Magazines
Scissors
Crayons
Popcorn

Procedures:

1. Begin the activity by asking the students what they like to eat for dinner. List the foods on the chalkboard. After assembling a good sized list, discuss what happens to each food while in the mouth. Erase all the foods that need to be chewed. Conclude the discussion by establishing the importance of teeth in eating.

2. Distribute magazines and scissors. Tell the students to find one or more pictures of people that have teeth they can see. Ask the students to blacken the teeth in one picture. Discuss the effect teeth have on appearance.

3. The tongue and teeth are used to help make sounds. As the class says the alphabet in unison, have them raise their left hand each time the tongue touches the teeth to make a sound and raise their right hand each time their lips close to make a sound. Use two students to count each type of event and record the results on the chalkboard.

4. Instruct the students to "explore" their teeth with their tongue. Have them describe how the teeth are different or alike. How do they change from the front to the back of the mouth? Why are they different? Distribute a kernel of corn to each student. Instruct them to chew it with their front teeth. Why are the teeth different from front to back?

Extensions:

1. Invite a speech therapist in to share information on the importance of teeth in making sounds.

A MOUTH FOR EVERY OCCASION

1.11 The student will describe the functions of the major parts of the mouth.

Grade Level: 1-2

Materials/Preparation:

None

Procedures:

1. Begin the activity by asking students to name reasons for having a mouth. List the responses on the chalkboard.

2. For each reason listed, attempt to identify the parts of the mouth that are used. For example: kissing--lips. Be sure to include: CHEEKS, LIPS, TEETH, JAW, TONGUE, MUSCLES.

3. Conclude the activity with a smile contest. Have students line up six at a time and give their best smile. Have the remainder of the class vote for the best smile. Repeat this procedure until everyone in the class has had a chance to smile. Then have the winners from each group compete for "grand smile." Discuss reasons why smiles look good. Emphasize the role teeth play in appearance.

Extensions:

1. Cut out pictures of people with beautiful smiles for a bulletin board display.

DENTAL TONGUE TWISTERS

1.11 The student will describe the functions of the major parts of the mouth.

Grade Level: 2-6

Material/Preparation:

None

Procedures:

1. Have the students hold their tongue in one position, i.e., on the roof or the floor of their mouth and have them repeat the tongue twisters. (They will probably get a lot of laughs from the funny pronunciations that come out of their mouths, but use this opportunity to teach phonics and the relationship between teeth and speech.)

Below are several fun tongue twisters.

* Ann Anteater ate Andy Alligator's apples and angry Andy Alligator ate Ann.
* Dippy Dan's dentist didn't dare dunk donuts.
* Doesn't Doctor Dilly know dental deals with dentition?
* Fanny Floss felt frustrated for forgetting Freddie Felt's fluoride.
* Fruity flavored fluoride fights fillings.
* Mouthy Martha melted marshmallows in her mouth.
* Slurpy Sam sloppily slurped a soft sugary soda.
* Tough tacky taffy takes teeth from Tilly Tattle Tooth.

Extensions:

1. Combine this activity with an art project by having the children illustrate the tongue twisters or by having them make hand puppets of the characters.

Topic 1.2: Organisms in the Mouth

Program Goal 1.Ø: To provide a general understanding of what may be found in the mouth.

The mouth is the home for a variety of organisms. These microscopic creatures live on the tongue and around the teeth. Most are bacteria, but yeasts and protozoa can also be found in the mouth.

The study of microorganisms in the mouth began about 3ØØ years ago when van Leeuwenhoek looked at scrapings from his teeth with a simple homemade microscope. He saw what we recognize today as bacteria in their various forms: cocci (spherical), bacilli (rod-shaped), and spirochetes (spiral-shaped). One milliliter of saliva may contain millions of bacteria and far greater numbers may be found in the crevices around the teeth. Research has identified a spherical bacterium, streptococci mutans, as the primary enemy of teeth.

Plaque is an ever present sticky film of bacteria on the teeth. This sticky film is produced by some of the bacteria present in the mouth, notably streptococcus mutans. As the bacteria reproduce, they form mats or colonies, which remain attached to the teeth even when rinsed or sprayed with water. This gelatinous mass (plaque) serves as a pathway for the movement of fluids, including nutrients for the bacteria and their waste products. These waste products include the acid which attacks tooth enamel and leads to decay. Because plaque is generally colorless, it is usually invisible to the eye, unless it is allowed to accumulate on the teeth for several days.

ALL THE PLAQUE YOU EVER WANTED TO SEE

1.21 The student will infer that plaque is an enemy found in the mouth.

Grade Level: 2-6

Materials/Preparation:

Soda straws
Food color
Water
Glass
Sink
Toothbrushes and floss
Mirrors

Add one part red food color to five parts water in a glass.

Procedures:

1. Plaque is hard to see. The purpose of this activity is to color plaque so that it will be easier to see. Distribute soda straws to students. Have students sip a small amount of water colored with food color. Have them swish the liquid around their mouth and then carefully spit it out in the sink.

   CAUTION: Don't get the food color on clothes.

2. Rinse the mouth with clean water.

3. Look at the teeth with a small mirror. The red color on the teeth is dyed plaque. The tongue and lips may be colored for a short time.

4. Brush and floss the teeth to remove the plaque.

5. Indicate that plaque continues to increase in amount unless it is removed thoroughly once a day. This is why we brush and floss.

Topic 2.1: Tooth Development

Program Goal 2.Ø: To develop an understanding of structure and function of teeth.

Background Information

All mammals, including humans, have two sets of teeth. The first set begins to appear within a few months after birth. They are replaced by a set of permanent teeth that remain for the rest of a person's life. The first set, the primary or deciduous teeth, begin to form some months before birth. The buds for some of the permanent teeth are also formed in the tissues of the jaw before birth. The approximate ages at which the various teeth appear is illustrated in Figure 2.

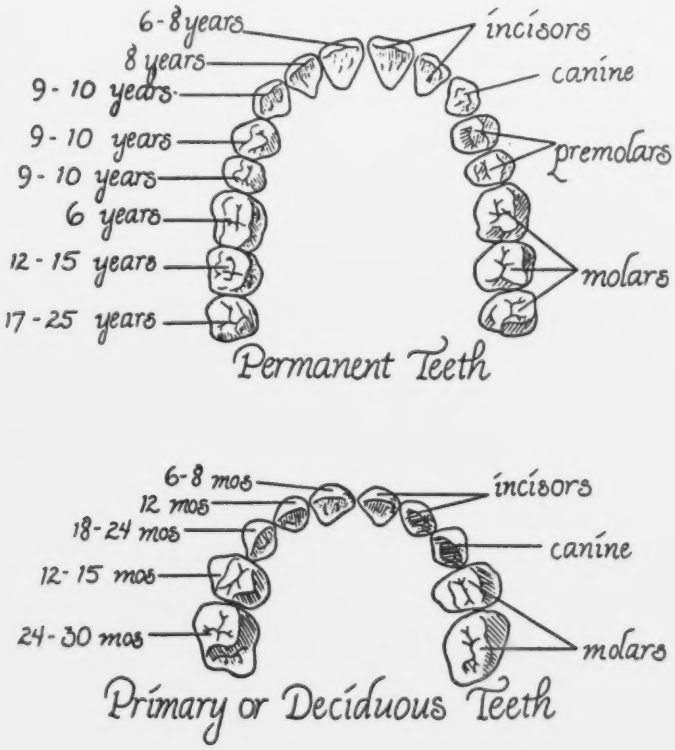


Figure 2. The types of teeth, their arrangement, and the ages at which they appear.

When a tooth emerges through the gum, it is said to erupt. In the case of primary teeth, this is often a source of discomfort for the young child. The eruption may irritate the gums and cause increased salivation. The eruption of the permanent teeth, with the occasional exception of the molars, usually does not involve the same problems.

The second set of teeth does not push the earlier set out of their sockets, as many people believe. As the new teeth grow within the jaw, a group of special cells form at the top of the new tooth. These cells dissolve the roots of the primary teeth.

Normally, there are a total of 20 primary teeth and 32 permanent teeth. They are categorized by function as incisors for biting, canines (cuspids) for tearing, premolars (bicuspids) for crushing, and molars for chewing. The last of the molars to appear are the wisdom teeth.

During the formation of the tooth, two separate tissues add to its structure (see figure 3). The enamel is formed by specialized epithelial cells. Another group of cells produces the dentin. Both of these hard tissues are formed in a manner similar to the process that forms bone. The enamel is made up of microscopic hexagonal rods that are cemented together, similar in form to a bundle of pencils, with the ends exposed at the enamel surface. The cementing substance is attacked first by acids in the initial stages of tooth decay. The enamel covers the crown of the tooth and goes a little below the gum line.

The dentin lies under the enamel and makes up the bulk of the tooth. It is softer and more porous than enamel.

Within the tooth socket, the root is surrounded by a periodontal membrane. This membrane is attached by fibers to the jaw bone and the root of the tooth. This arrangement cushions the tooth during chewing.

The tooth is nourished by blood vessels and nerves found in the pulp cavity. If bacteria invade the pulp cavity, infection can spread to the root canal and jaw bone, resulting in an abscess.

The main function of the teeth is chewing. Chewing is really a very complicated process. The teeth must be of the right size and shape, and must be properly aligned in the jaws so that the movements of the lower jaw will bring the opposing teeth into the proper relationship with each other for efficient chewing.

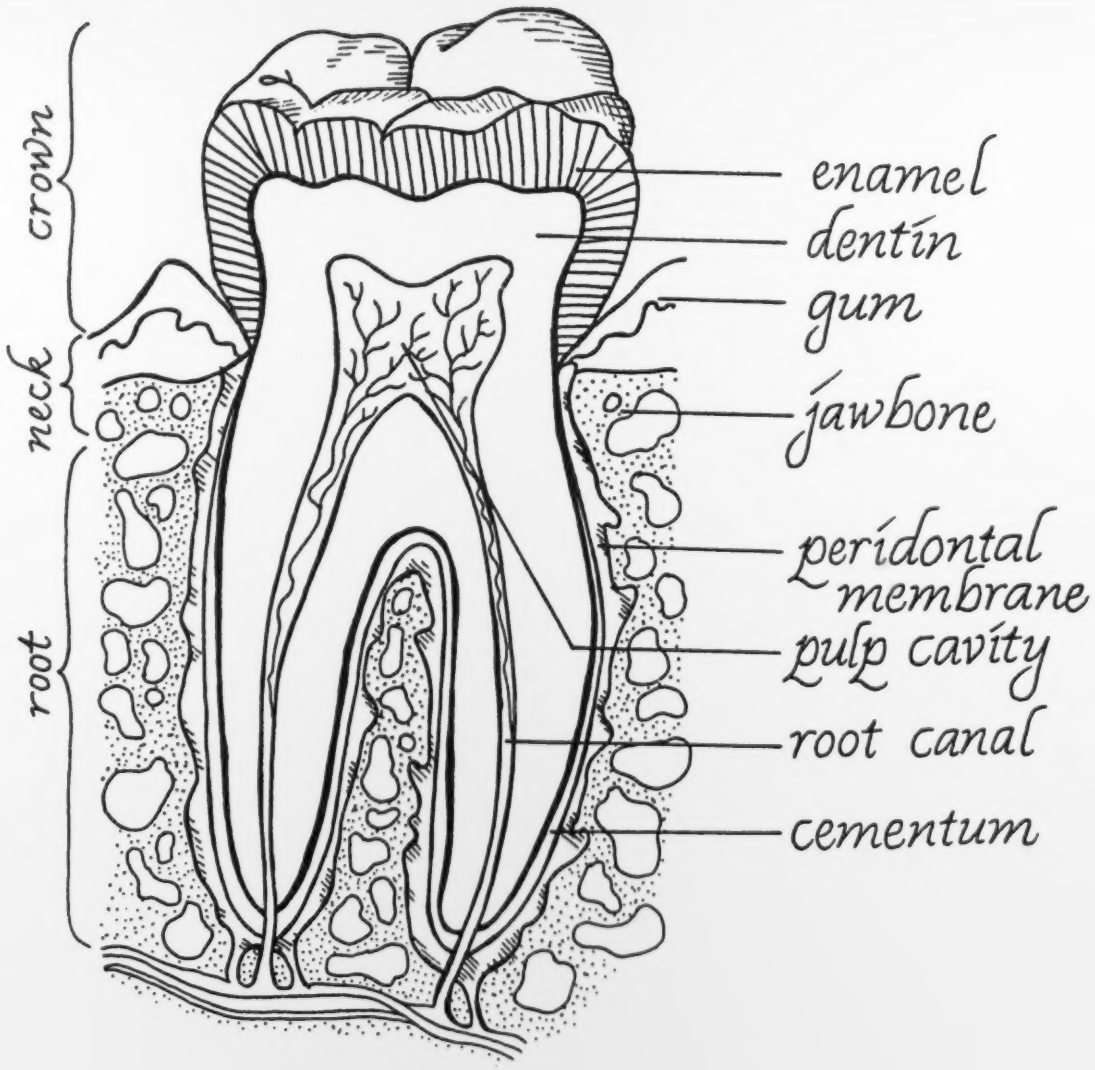


Figure 3. Cross-Section of a Tooth and its Supporting Structures

WOULD YOU KNOW A TOOTH IF YOU SAW ONE

2.11 The student will describe the development of both primary and permanent teeth.

Grade Level: 1-2

Materials/Preparation:

Worksheet

Procedures:

1. Introduce the activity by talking about teeth that have come out. Have older brothers or sisters lost more teeth? Why do you think they come out? Introduce the terms: PRIMARY and PERMANENT TEETH. Use the background information section as a reference for information to share with the students. Adapt the concepts to the abilities of your students.

2. Distribute the Parts of a Tooth worksheet. Introduce the terms: BONE, CROWN, ROOT, and GUM. Label the tooth and fill in the blanks.

Extensions:

1. Have a show and tell session on the topic, "When I lost my first tooth.

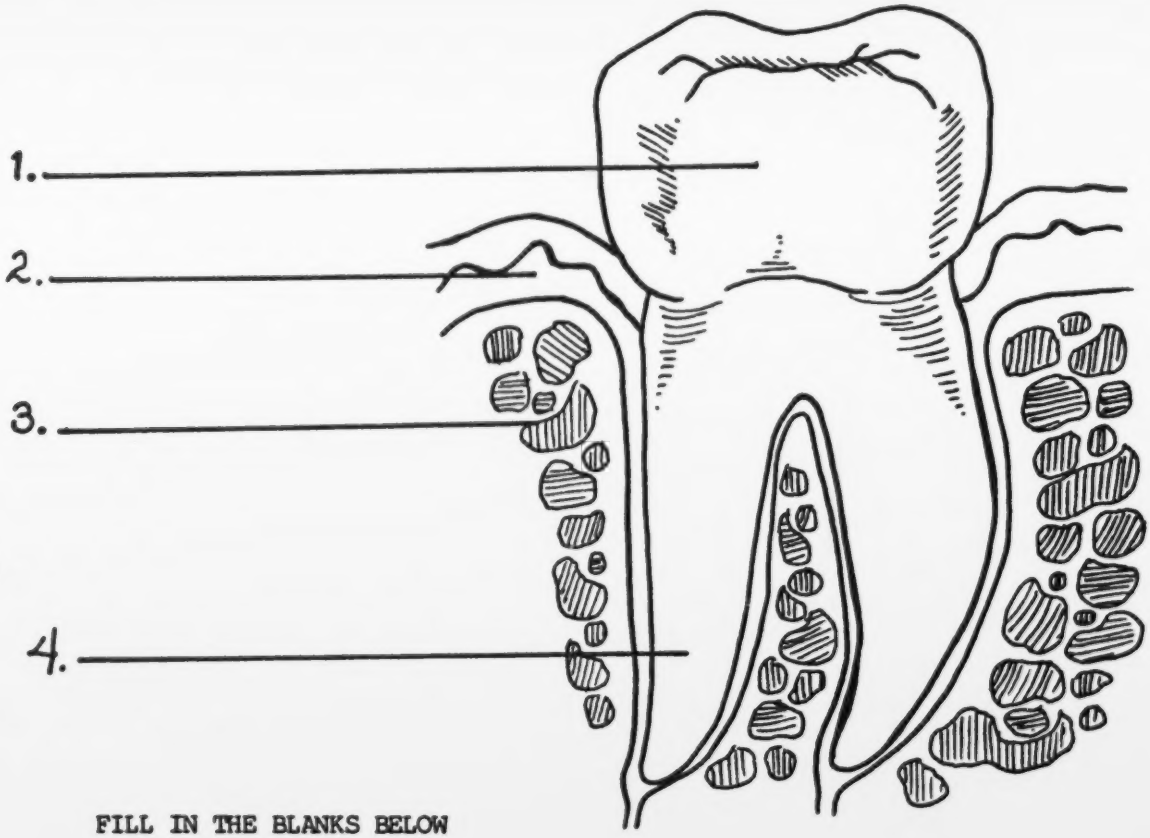
2. Make up a story about, "The person whose teeth would not stop growing."

WORKSHEET: Would You Know A Tooth If You Saw One

NAME_____

PARTS OF A TOOTH

Correctly label the following parts of this tooth: bone, crown, gums, root.



FILL IN THE BLANKS BELOW

permanent primary crown root gum bone

1. The first set of teeth we get are called _____ teeth.
2. The part of a tooth we can see in the mouth is the _____.
3. The hard part of the tooth that holds the tooth tightly in place is the _____.
4. The soft pink material that grows around our teeth is called the _____.
5. The last set of teeth we get are called _____ teeth.

Topic 3.1: Tooth Decay

Program Goal 3.0: To develop an understanding of tooth problems and how to prevent or alleviate these problems.

The most prevalent dental problem in children is dental caries. Decay is caused by a bacterial infection.

There is an ever present sticky film of bacteria on the teeth. This mass includes nutrients for the bacteria and their waste products including acid. As the bacteria reproduce, they form masses that remain attached to the teeth even when rinsed or sprayed with water. Such masses are called plaque. Plaque is more visible when dyed.

Undisturbed plaque will continue to increase in thickness and complexity. When proper oral hygiene is not practiced, plaque will grow to fill in pits, fissures, cracks, or any tooth area protected from lip, tongue, and cheek action.

The role of sugar in caries production has been well documented. As the bacterial community develops, various organisms consume the available sugars, producing products that include acids which dissolve the enamel. The plaque helps hold the acid against the tooth surface. These acids may be produced for at least 30 minutes after food is eaten. Whether or not the enamel will be destroyed depends on the hardness of the tooth enamel, the strength of the acids, and the amount of time the acids are allowed to remain on the teeth.

Elimination of sugar from the diet is not possible or desirable. However, one can easily influence the frequency of eating sugar rich foods, the length of time the sugar stays in the mouth, and the physical form of the sugar (such as sticky candy).

THE PLAQUE MONSTER

3.11 The student will identify plaque as the major agent of tooth decay.

Grade Level: K-5

Materials/Preparation:

Skit script

It is suggested that an older grade level class present this skit to a lower grade level.

Procedures:

1. Prepare for the skit as follows:

   Characters are: Narrator, four Plaque Monsters, Cowboy Joe, Tonsils, and four guards.

   If you need fewer characters, combine some of the guards and plaque monsters parts. If you need more, use more monsters or guards to take part in the action without speaking.

   The simplest set would use desks or chairs for the houses and the Tooth Statue. You could also use boxes painted or covered with butcher paper, or you could use a butcher paper backdrop. You've just got to have one crack or hole where the Monster can hide.

   The monsters are dirty and grubby, with most of their teeth blacked out. You could dress them in cutoffs and torn T-shirts, or gunny sacks and Halloween wigs. Their "weapons" could be things like hammers and picks and drills. (But be careful!)

   Cowboy Joe is dressed like a cowboy, and Tonsils like an Indian. They ride stick horses (or they can even just pretend to ride them) and carry big toothbrushes in their gun holsters. Cowboy Joe carries a rope lasso.

   The guards could be dressed in white shirts and pants. Instead of rifles, they carry big toothbrushes over their shoulders.

   The narrator could be dressed in neat school or Sunday clothes. Or you could change the part a bit and have him sound like a reporter (like Kermit the Frog on Sesame Street) and dress in a long coat and carry a microphone.

COWBOY JOE AND THE PLAQUE MONSTER

Narrator: In a country not too far from here, there are two towns right next to each other. They are both small towns, but otherwise they are very different. The first town is called Toothburg. Houses there are clean, white, neat, and in good repair. The people smile a lot because they're happy, and because they are very proud of their town. They enjoy smiling so much that they even have a statue of a smiling mouth in their town!

The other town is called Cavityville. Its houses are run down and full of big holes. The streets have chuckholes all along them, and it is a very dirty and ugly place. Cavityville is inhabited by an evil race of creatures called the Plaque Monsters, who never smile because their teeth are in such terrible shape that it even hurts to talk. The plaque monsters envy the people in Toothburg, and often plot to see how they can take over the town and move in. They want to fill Toothburg with cavities and make it just as ugly as Cavityville, but so far they have never been able to succeed. But today the plaque monsters are planning a new approach! (Plaque Monsters enter, talking together.)

Plaque Monster #1: How are we going to get into the town?

Plaque Monster #2: Getting in isn't the problem--staying there is what's hard. You can get in almost anytime when the guards go to dinner, but they always come back on patrol after they eat, and then they get us with those brushes!

Plaque Monster #3: Yeah, look, they're going on their lunch break right now. Hey! I've got it! We sneak in there right now while they're not looking, and we will hide between the teeth in the statue! Not even the brushes can reach us there!

Plaque Monster #4: Great idea! Don't forget your weapons!

Narrator: The plaque monsters might have been successful in their evil plot, but at this very moment Cowboy Joe and his faithful friend Tonsils are riding into town. (Enter Cowboy Joe and Tonsils.)

Guard #1: Help! Help! The plaque monsters are attacking our teeth! Please help us, Cowboy Joe!

Cowboy Joe: Plaque Monsters? Where?

Guard #2: Over here! (They all run to the statue and attempt to brush the monsters out. They get all but one and chase them away, but the last one is hiding between the teeth.)

Guard #3: My brush won't reach him! What can we do?

Cowboy Joe: Never fear. I've got my trusty dental-floss lasso right here. Someone help me, and we'll have that plaque monster out of

there in no time. (They help guide the lasso in between the teeth to catch the last monster.)

Cowboy Joe: We've got you now, you miserable monster! You won't get to bring your ugly cavities into Toothburg this time! Take him away, Tonsils. (Tonsils leads plaque monster away.)

Guard #4: Thanks, Cowboy Joe, you've saved our town. I'd sure like to learn how to use that lasso of yours!

Cowboy Joe: I'd be glad to teach you anytime! (Exit.)

TEACHER NOTE: This would be a good time to have a lesson on dental floss. Teach your students the proper way to floss. If your students do this activity with younger grades, have them teach the students how it should be done. (Students in grades K-2 should be told to have their parents help them floss so they don't injure their gums.)

Extensions:

1. Have students make up stories about a happy tooth that had no plaque and a sad tooth that had plaque.

2. Set up a Board of Geniuses.

   The object of the game is to gain a position on the board of geniuses and maintain it as long as possible. Start the game by choosing four students for the board of geniuses. The rest of the class tries to stump the board by asking questions on dental health. The student who asks a question that can't be answered exchanges places with the board member.

A FORMULA FOR DECAY

3.11 The student will identify plaque as the major agent of tooth decay.

Grade Level: 2-4

Materials/Preparation:

Toothpicks
Glass microscope slide
Colored chalk
Worksheet

Procedures:

1. Introduce the activity by asking the students what they know about tooth decay. Accept all answers, but do not indicate whether any of them are correct or incorrect.

2. Use a toothpick to scrape some of the whitish material from the base of a tooth. Place the scrapings on a glass microscope slide. Show the students. Indicate that this is PLAQUE and is the stuff that causes decay. Indicate that plaque is made up of bacteria. Bacteria are present in everyone's mouth. Saliva and food help the bacteria grow and attach to the teeth. Place the following formula on the chalkboard:

   sugar + bacterial plaque = acid
   acid + tooth = decay

3. Draw a picture of a tooth with colored chalk and label it (enamel, dentin, pulp, and cementum). Indicate that enamel is the hardest part of the tooth, but is made of material that can be dissolved by acids. The dentin is much softer and can be dissolved easier than the enamel. The pulp is very soft and contains nerves and blood vessels.

   Simulate decay by putting a smear of plaque on the side of your drawing. Add sugar to feed the bacteria. Show the acid dissolving the enamel. Discuss reasons there is no pain until the pulp is reached.

4. Distribute the worksheet and have students label the parts. **Answers:** A. Crown, B. Gums, C. Root, 1. Enamel, 2. Dentin, 3. Pulp, 4. Cementum.

Extensions:

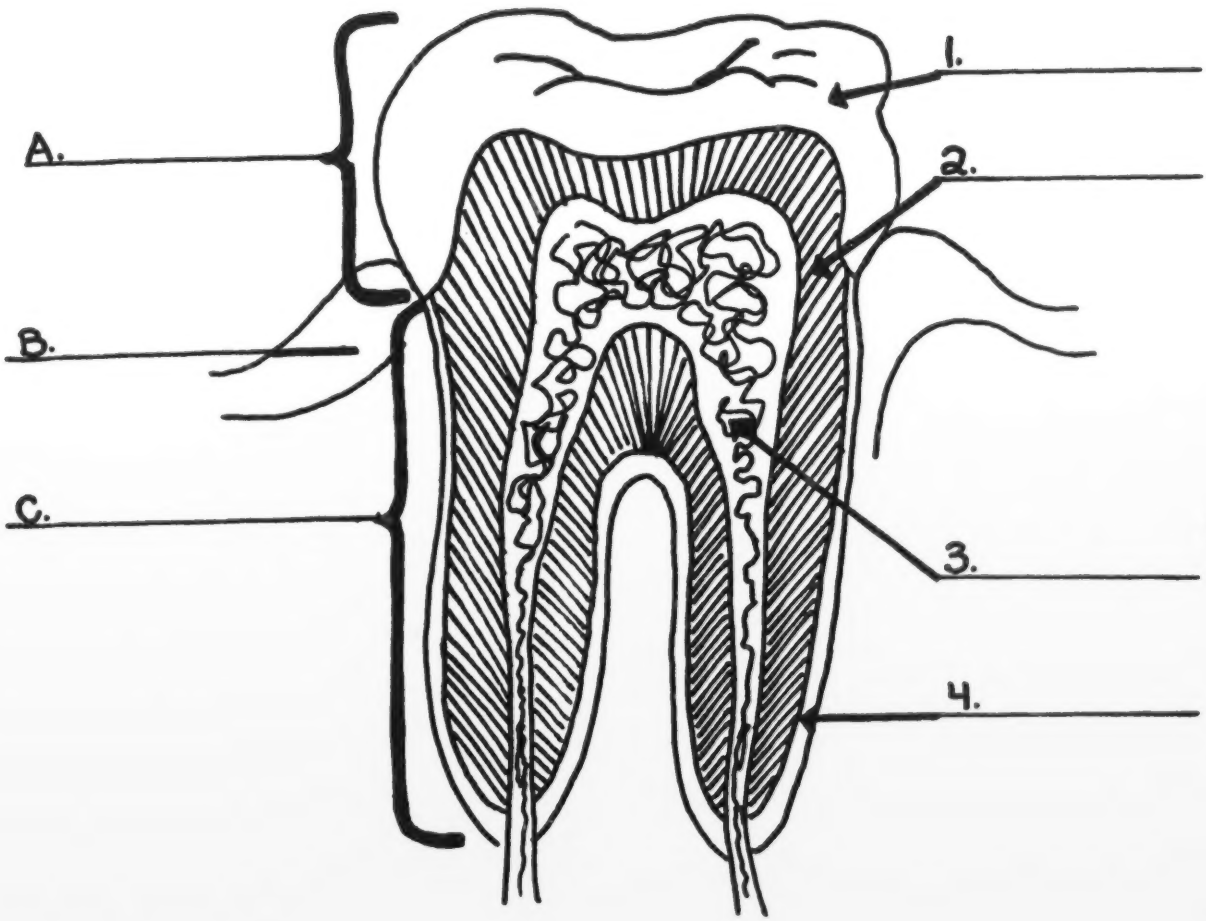
1. Obtain animal teeth and place them in various solutions, such as vinegar, cola pop, Lime Away, or dilute hydrochloric acid. Observe the teeth over a period of weeks.

2. Discuss other diseases that are caused by bacteria such as some sore throats, diptheria, tetnus, and whooping cough.

WORKSHEET: A Formula For Decay

NAME _____

PARTS OF THE TOOTH



FILL IN THE BLANKS USING THESE WORDS:

root crown cementum

gums enamel pulp dentin

DECAY LOOKS GROSS

3.12 The student will describe the influence plaque has on teeth.

Grade Level: K-6

Materials/Preparation:

Extracted teeth
Plaster of Paris or clay
Small circular container

Have a dentist save a variety of extracted teeth.

Procedures:

1. Separate teeth into groups that demonstrate the various stages of decay. Choose 4 or 5 teeth ranging in severity from no decay (probably a wisdom tooth) to gross decay.

   Using the small circular container as a mold, set the teeth in soft plaster of paris so the decay is visible. Clay may be used if plaster of paris is not available.

   Although the teeth may eventually dry out and become brittle, this valuable teaching aid will last for several years and will allow the students to actually see the stages of decay.

2. Discuss the following concepts.

   A. The benefits of stopping decay early.

   B. The importance of regular dental visits to detect beginning decay.

   C. The role of fluorides in stopping the decay process.

   D. The mechanics of the decay process, often referred to as the acid cycle:

      Sugar + bacterial plaque = acid
      Acid + tooth = decay

Extensions:

1. Assign the students the task of interviewing grandparents or neighbors that have false teeth. The purpose of the interview is to obtain funny stories about false teeth. Have them share the stories in class. Send copies of the better stories to the Oral Oracle.

ACID, EGGS, AND BONES

3.12 The student will describe the influence plaque has on teeth.

Grade Level: K-6

Materials/Preparation:

Eggs
Chicken leg bone
2 jars or glasses
Vinegar

Procedures:

1. Introduce the lesson by providing information on the role bacteria, plaque and acid play in tooth decay. Adapt background information for your grade level student.

2. Explain that certain acids dissolve minerals such as calcium, one of the minerals in teeth, bones, and egg shells. One of these acids is found in vinegar.

3. Place an egg in a jar or glass of vinegar. Observe the egg closely. Do you see any bubbles? Feel the egg after 6-24-48 hours. What happens to the calcium?

4. Put a cooked chicken leg bone in a container of vinegar. Feel the bone every day for two weeks. What happens?

5. Continue the activity by discussing the following information:

Relationship of Bacteria and Plaque

Plaque is a sticky, invisible film that is made up of colonies of bacteria which adhere to the teeth. These bacteria have the ability to change sugar into decay producing acid. Plaque is dentally dangerous because it can hold the acid next to the teeth, which dissolves the tooth structure and leads to decay. Plaque is also a major factor in causing gum disease.

Daily Plaque Removal

Dental decay can be reduced by removing the plaque that accumulates on the teeth at least once every 24 hours. This breaks up the bacteria colonies and prevents the acid from being held on the teeth. Tooth decay begins under the dental plaque, so the bacteria responsible for tooth decay is not harmful if there is no plaque on the teeth. For this reason, it is important that the children participate in a daily plaque removal program by thorough brushing and flossing, ideally supervised by their parents. As their teacher, you can aid the parents by stressing the importance of cleaning teeth on a daily basis.

Formula for Decay

Dental decay is a complex process involving the interaction of three factors: 1. teeth; 2. bacteria (plaque); 3. sugar or other fermentable carbohydrates. The disease does not occur if any one of these factors is missing. Theoretically then, people could prevent decay by doing one of the following:

1. Eliminate sugar from the diet
2. Eliminate plaque from the teeth
3. Eliminate teeth or fortify them with fluoride

Many people think that eliminating sugar is the easiest and most effective way of preventing decay. Realistically, however, it is impossible to eliminate all sugar from our diet, simply because it is found in nearly every food that we eat. Instead of teaching our students to quit eating sugar, it is more reasonable to teach them to regulate how often they eat it. It is the frequency of sugar consumption, not the quantity eaten, that contributes to dental problems. Each time sugar is eaten, acid is produced, remaining in the mouth for approximately thirty minutes. Therefore, the total exposure of the teeth to acid attack is determined by the number of times that sugar is eaten each day. Teach your students to eat their sugary snacks with their meals and to eat non-cariogenic (sugar free) snacks between meals. This will allow them to enjoy a sweet without subjecting their teeth to extra acid attacks.

Plaque is composed of millions of bacteria that attach themselves to the teeth, and even beneath the gums. These bacteria have the ability to change sugar into acid, which, when held next to the tooth by the plaque, dissolves the enamel and causes decay. Daily plaque removal (brushing and flossing) will prevent the acid from being applied to the teeth, thus preventing the development of decay. The plaque can form again within 24 hours, so daily brushing and flossing are important.

The most effective way of avoiding cavities would be to remove all the teeth. However, since false teeth pose many more problems than natural teeth, this is clearly not a reasonable consideration. It is much wiser to use fluoride to fortify the teeth so they are resistant to decay. Preventing decay beats taking a chance on getting cavities or of losing all the teeth. Therefore, it is important that the proper use of fluoride be understood by the students, and that they receive an adequate amount of it each day.

Maximum prevention is attained when all three elements of the formula are addressed:

1. Re-education in the frequency of sugar intake
2. Daily brushing and flossing to remove plaque
3. Informed daily use of fluorides

Extensions:

1. Soak an egg in fluoride mouthrinse for 24 hours. Set up a controlled experiment in which you compare the effect of vinegar (an acid) on the fluoride soaked egg, and on an egg that has not been exposed to fluoride. (Fluoride mouthrinse can be purchased from a drug store or supermarket.)

2. Make a hole in an unbruised apple. Use a knife to pierce the apple about an inch deep. Remove a piece of apple about the diameter of the knife. Place the apple in a bag for a few days. Then cut through a cross section near the hole. Observe how the decay has spread. Indicate that this is how decay spreads in a tooth, only not as rapidly.

3. Use a potato or carrot to do some block printing of a dental message or to make a simple picture (i.e., tooth, toothbrush, dentist, dental floss, etc.). Here the potato works like a rubber stamp. If the students want the picture to be linked, with no background, then have them carve the potato so the picture is raised. If they want the picture outlined, then have them indent it. (If liquid dishwashing detergent is mixed with the Tempra paint, the cleanup will be easier.)

Topic 3.2: Preventing Decay Problems

Program Goal 3.0: To develop an understanding of tooth problems and how to prevent or alleviate these problems.

The single most effective element in the reduction of dental decay is fluoride. Fluoride is considered an essential nutrient for the growth and development of teeth and bones. It may be found naturally in most water supplies and in some foods.

There are two ways in which fluoride is utilized, systemically and topically. Systemic fluoride is taken into the body by swallowing. It affects the developing teeth and bones. Fluoride is incorporated into the developing enamel to make it more resistant to decay. Systemic fluoride is obtained either from drinking water that has a fluoride content of about 1 ppm (parts per million), or from drops or tablets taken at home or school. Fluoride drops are given to infants and tablets are given to older children. To get the full benefit of systemic fluoride, it should be given daily from birth through at least age 14. It is recommended that all children have either, but not both, of these exposures to systemic fluoride.

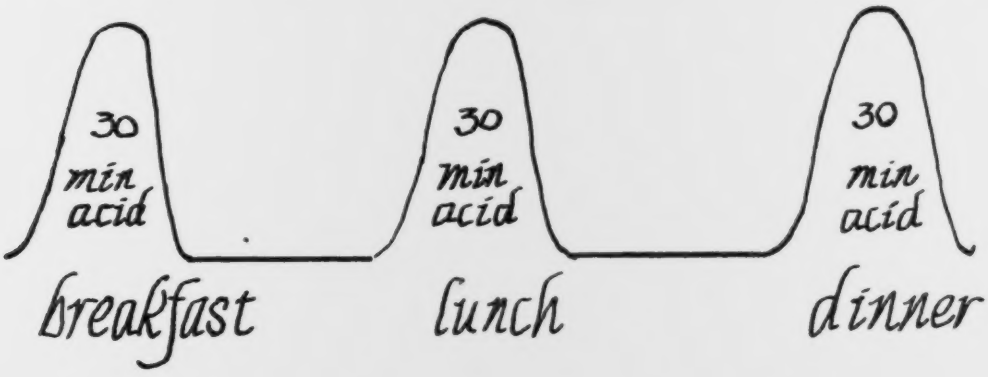
Topical fluorides are applied to the teeth already present in the mouth resulting in a temporary protection against tooth decay. There are three common methods for applying topical fluorides: a fluoride dentifrice (toothpaste) can be used at least once a day; fluoride mouthrinses can be used on a weekly basis at school or a daily basis at home; and, during regular dental check-ups topical fluoride may be applied to the teeth by the dentist or dental hygienist. It is recommended that children take advantage of as many topical exposures as are appropriate, since the combination is probably more beneficial than any single method alone.

Fluorides are most effective against cavities on the smooth surfaces of the teeth. The pits and fissures, or biting surfaces of the back teeth, are still subject to decay even when fluoride is used. For this reason sealants are used to protect these tooth surfaces from decay.

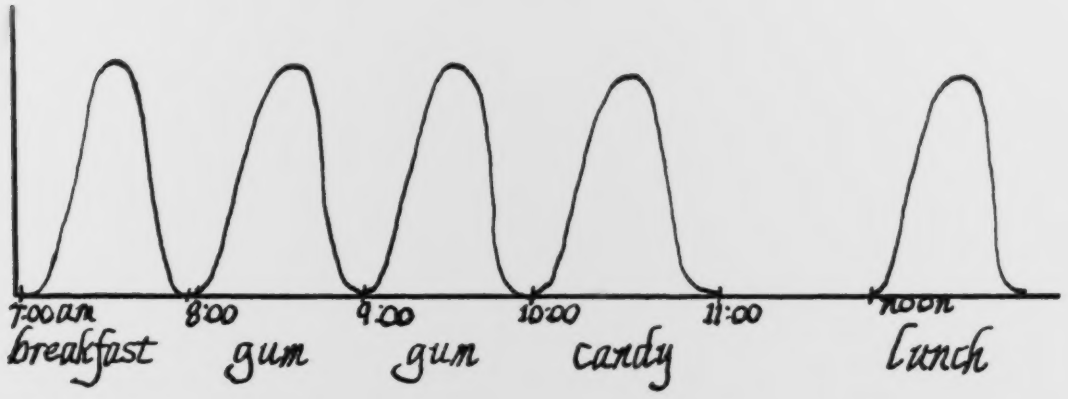
In the sealant procedure, the dentist or dental hygienist applies plastic resins in liquid form to the pits and fissures. The resins harden and seal out the decay-causing bacteria. As long as the sealant is in place, the tooth is safe from decay. If the sealant comes off, the dentist can replace it. The sealants are clear or lightly tinted and are not readily noticeable. Sealants work best on newly erupted permanent teeth. Therefore, a child should be considered for sealants at age 6-7 when the first molars appear, and again at age 11-12 when

the rest of the permanent teeth appear. Sealants are not appropriate for teeth with fillings or decay, or for the teeth of adults.

Whenever sugar is eaten, acid is produced by the bacteria in the mouth. This acid remains in the mouth, causing a significant reduction in pH for approximately 30 minutes. This acid in the mouth for long periods of time can cause tooth decay. The more frequently sugar is eaten, the longer the acid exposure and the greater the chance of cavities forming. For example, when we eat three times a day, acid production is limited mostly to three 30 minute periods or 1-1/2 hours.



Each between-meal sweet snack will add another 30 minute acid producing time.



If sweets are eaten many times a day, it is possible that acid production will be practically continuous and the teeth may decay more rapidly.

Elimination of between-meal snacks of sweets will decrease plaque formation by reducing the amount of acid formed on the surfaces of the teeth.

Brushing alone does not remove the plaque between the teeth. This plaque is best removed with floss. Water sprays reduce food debris, but do not remove plaque. The best method for controlling plaque is to thoroughly brush and floss every tooth every day. However, the best method for reducing dental caries is still the daily use of systemic fluoride through age 14, and the lifelong daily use of topical fluorides.

Regular dental checkups are important if dental disease is to be prevented and controlled. Dental caries may begin as soon as a child has teeth. Children should have their first dental examination before all of the primary teeth have erupted (usually before age 2). There is no set rule for how often a child should visit the dentist. In general, it is suggested that dental visits be made every six months. In part, the frequency will depend on the individual's eating habits, how clean the mouth is kept, and whether decay is present. After checking the child's teeth, the dentist will be able to suggest an appropriate schedule. During regular dental visits, the dentist can:

1. Develop rapport and trust amongst the child, the parent, and the office staff.

2. Professionally clean the teeth to remove calculus and stains.

3. Apply fluoride and prescribe a fluoride supplement for daily home use to make teeth less susceptible to dental caries.

4. Apply sealants to protect the decay-prone chewing surfaces on the back teeth.

5. Detect early dental caries and other diseases through the use of visual and x-ray examinations.

6. Treat developing cavities early, while the damage is still minimal.

7. Provide instruction on plaque control (brushing and flossing).

8. Provide diet counseling.

RINSE DAY FOOTBALL

3.21 The student will identify fluoride and sealants as the most effective agents in preventing tooth decay.

Grade Level: 2-4

Materials/Preparation:

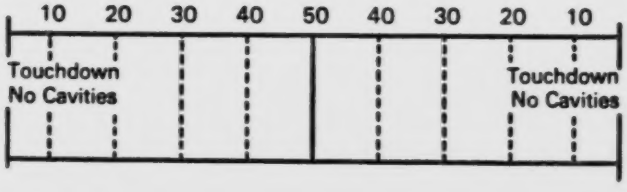
This activity is intended to be used in conjunction with a school fluoride rinse program.

Procedures:

1. One of the most cost-effective self-applied topical fluoride techniques is a fluoride mouthrinse in school. Once a week, over 35,000 students in Utah rinse for one minute with a 0.2% sodium fluoride solution. Research has proven weekly rinsing in school reduces cavities by an average of 35%.

2. To help motivate quiet, efficient classroom rinsing, each week set aside ten to fifteen minutes, which includes both time for rinsing and playing Rinse Day Football. Explain to the class that the faster the rinse is completed, the more time will be available to play the game. Choose students to participate who were quiet and courteous during the rinse. Penalties for unsportsmanlike conduct may be called for misbehavior during the rinse. Penalties might include lost yardage or lost playing time.

3. Present a lecture on fluoride facts, or other subject matter. Draw a field on poster board, which can be put away weekly, or quickly draw a grid on the blackboard each week.



Rules for Rinse Day Football

A. The receiving team begins at their own 20 yard line, and advances 10 yards for each correct answer. A toss of the coin determines the first team to receive questions.

B. The receiving team continues to advance until a question is missed, then the other team takes over and advances from that point.

C. When the ball changes sides, the new receiving team can, "run back the punt," by answering the question missed by the other team. They will advance 20 yards for a correct answer, or simply take possession in place for an incorrect answer.

D. Team members take turns answering questions, with no help from other team members. Illegal prompting results in a loss of the ball. However, when "returning the punt," the team may huddle and decide on their answer.

E. A touchdown is scored by reaching the goal line, and counts 6 points. The teacher then asks an "extra point" question, which scores 1 point. If penalties push a team back to their goal line, a touchback worth two points is scored.

Suggested Questions

You may wish to adapt these questions to the abilities of your class, or write your own questions.

1. Spell fluoride. (f l u o r i d e)
2. What are the two general ways of providing fluoride? (Systemic and topical)
3. Is a systemic fluoride swallowed or applied directly on the teeth? (Swallowed)
4. Name two different methods of providing systemic fluoride. (Water fluoridation and fluoride drops or tablets)
5. What is the most effective and inexpensive way to provide systemic fluoride? (Water fluoridation)
6. What does fluoridated water mean? (Fluoride is added to drinking water at the source, to bring the fluoride level up to one part per million)
7. Name a city in Utah that is adequately fluoridated. (Brigham City, Roosevelt, Helper, Milford, Marysvale, Santa Clara, Minersville, Snowville, Hinckley, and others)
8. What ages should receive systemic fluoride? (Birth to age 14)
9. Why is systemic fluoride recommended from birth to age 14? (This is the time tooth enamel is forming)
10. What is the result of taking systemic fluoride from birth to age 14? (Tooth enamel will be more resistant to decay)
11. What is topical fluoride? (Fluoride that is placed directly on teeth)
12. Do topical fluorides become a permanent part of a tooth? Explain. (No, they are temporarily incorporated into the outer tooth surface and then slowly leached away)

Extensions:

1. Once the fluoride questions are no longer a challenge, write new dental health questions on brushing, flossing, seeing a dentist, or eating habits for good dental health.

2. Review other subjects using Rinse Day Football.

HOW FLUORIDES AFFECT TEETH

3.21 The student will identify fluoride and sealants as the most effective agents in preventing tooth decay.

Grade Level: 3-6

Materials/Preparation:

Worksheet

Procedures:

1. Introduce the lesson by asking students what they know about fluoride. Accept all answers.

2. Indicate that fluoride is a mineral which, along with other minerals like calcium, phosphorus, and iron, is essential for good health. Fluorides occur naturally in some foods and in water supplies.

3. Distribute the worksheet. The students will need the reading to solve the puzzle.

   Answers: (Fluoride Puzzle) Fluorapatite or Fluoridation, Fluoride, Calcium or Helpful, Phosphorus or Toothpaste, Surface, Topical, Acid, Teeth or Areas.

   (Scramble) Visit Dentist for Topical Fluoride.

WORKSHEET: How Fluorides Affect Teeth

NAME_____

Fluorides and Decay

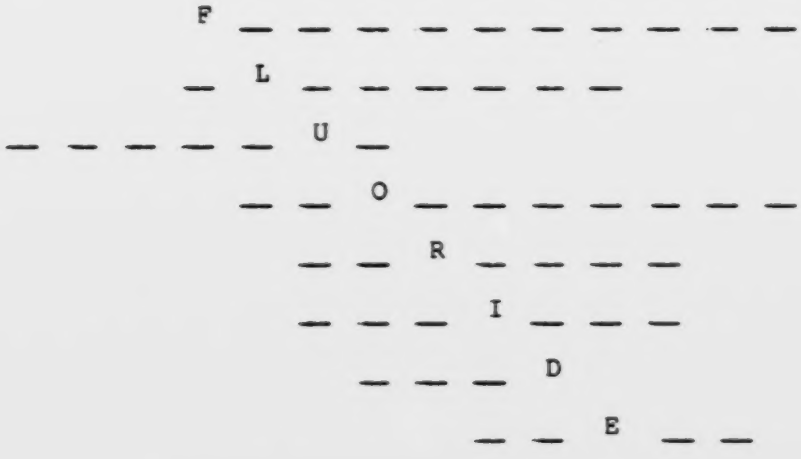
Teeth are made up of minerals. The mineral, apatite, is found in tooth enamel. Apatite crystals contain calcium, phosphorus, and fluoride. When fluoride is present, it combines with apatite to form an acid resistant mineral called fluorapatite. If fluoride is present as teeth develop, the teeth are more resistant to decay.

The usual method of obtaining fluoride is in drinking water. The water in some areas has natural fluoride in it. Other communities add fluoride. Where water fluoridation is not possible, some people take fluoride tablets. Tablets should be taken daily until a person is about 14 years old.

Fluorides can also be applied to the surface of the tooth. This is called topical fluoride. This can be done by a dentist during regular visits or at home by brushing teeth with a fluoride toothpaste. Sometimes it is helpful to obtain fluoride from more than one source.

Fluoride Puzzles

The words needed to fill the blanks are found in the above reading.



Unscramble These Words

S I T I V _____ I L A C O P T _____

T E N D T I S _____ L O F U I D R E _____

R O F _____

TOOTH DECAY ROLE PLAY

3.21 The student will identify fluoride and sealants as the most effective agents in preventing tooth decay.

Grade Level: 3-5

Materials/Preparation:

Whacker (nylon stocking, rag, balloon, etc.) Represents the acid that was produced from sugar and bacteria.

Jacket. Represents the protection that fluoride gives to the tooth.

Number of students involved:
Three or four students needed to represent the following:

a. Unfluoridated tooth with cavity
b. Fluoridated tooth
c. Plaque - (attacks teeth)
d. Dentist (the teacher may want to play this part to maintain proper perspective.

Procedures:

1. Initiate the activity by reviewing or discussing the following:

   A. Benefits of seeing a dentist regularly

      1. Cavities are cheaper and easier to fill when small.
      2. Avoid pain.
      3. Keep your teeth for a lifetime.

   B. The mechanics of the decay process. (See page 23)

   C. Effectiveness of fluoride. (See page 25)

2. Role play the function of fluoride

   A. Select a student to represent an unfluoridated tooth. This tooth is attacked by the plaque using the "Whacker". After being attacked several times, have the tooth yell "OUCH" and hold its mouth to indicate that it has a toothache. (To add more fun and excitement to this role play, have the tooth jump up and down and moan and groan as if it really is in pain.)

Send the tooth to the dentist and have him look in the mouth. Make the diagnosis that there is a cavity and it must be repaired. Have the dentist go through the motions of repairing the tooth:

a. A shot to deaden the pain
b. Drilling out the decay
c. Filling the cavity

Explain that this cavity was repaired while it was still small and the tooth was saved. If this tooth waited to see the dentist until the cavity was bigger, it would have been much more expensive and difficult to save.

B. Select a student to represent a fluoridated tooth. Put the jacket on the tooth and have it kneel on the floor. Explain that this represents a tooth before it erupts. The fluoride that it took was used to strengthen teeth.

Have the tooth stand up to represent an erupted tooth. Have the plaque attack this tooth with the whacker. After being attacked a few times, instruct the tooth to stick out its tongue at the plaque and go "BLAA". Explain that this indicates that the fluoride was protecting this tooth.

Have this tooth go to the dentist for a check-up. Of course, everything will be fine and the dentist will congratulate it and encourage it to continue taking fluoride. Explain that this tooth can last forever without ever having a cavity; also, that it is better to prevent dental decay than to repair the tooth.

C. Have both students come to the front of the class and ask the class which one they would prefer having in their mouth, the fluoridated tooth or the unfluoridated tooth. They will want the fluoridated tooth unless the student who is chosen is not well accepted by the others. Be careful who you choose as your teeth.

Extensions:

1. Use a construction "hard hat" or football helmet to represent sealants and extend the discussion to use of sealants.

2. Have students do the Dental Acrostics Worksheet.

WORKSHEET: Tooth Decay Role Play

NAME_____

DENTAL ACROSTIC

An acrostic is made by writing a word(s) and then using the individual letters of the word(s) as the beginning of a sentence. Using the words DENTAL HEALTH, make an acrostic. One letter is done for you. (The words at the bottom should be used in your sentences.)

D_____

E_____

N_____

T_____

A_____

L_____

H_____

Eating sugar may cause tooth decay._____

A_____

L_____

T_____

H_____

bicuspid	cavity	fluoride	plaque	calculus
filling	gingivitis	toothbrushing	cementum	flossing
	peridontal disease		tooth decay	

DENTAL HEALTH WITH MOTHER GOOSE

3.21 The student will identify fluoride and sealants as the most effective agents in preventing tooth decay.

3.22 The student will conclude that nutrition and eating habits may influence tooth decay.

Grade Level: 1-4

Materials/Preparation:

It would be best if you knew the story and did not have to read it.

Procedures:

1. Follow the outline as presented below.

A Dental Health Adventure with Mother Goose

Boys and girls, I have a real surprise for you today. It is special because it involves, "Mother Goose," and a magical, imaginary trip to that wonderful world where she lives. To be invited on such a trip is a special honor, because she is rather particular about who she lets visit. She only allows children to visit who will promise to obey all her rules, and her most important rule is that you should listen to her nursery rhymes to see if you can learn the hidden message about your teeth. We will talk about those messages when the trip is finished.

Mother Goose has sent her own private plane to pick us up and take us on this imaginery trip, which is about to begin. "Listen."

"Flight 306 to Mother Gooseland is ready to take off. Would Miss/Mrs./Mr._____class please board the plane and fasten their seat belts?"

After the plane takes off, we are entertained by one of the characters in Mother Gooseland. It is a cute little mouse who keeps running up a clock and saying,

> Hickory, Dickory, Dock,
> The mouse ran up the clock.
> It said to the children. 'Your teeth must be clean,
> Or Mother Gooseland can't be seen.'
> Hickory, Dickory, Dock."

"O.K. boys and girls, you heard the warning, so let's use our imagination and take care of our teeth before we land in the magical, pretend world of Mother Goose."

(Note to teachers: Have the children go through the actions of each verse of the following rhyme.)

"This is the way we brush our teeth,
Brush our teeth, brush our teeth,
This is the way we brush our teeth,
When we get up in the morning.

This is the way we rinse with fluoride,
Rinse with fluoride, rinse with fluoride,
This is the way we rinse with fluoride,
Every week at school.

This is the way we floss our teeth,
Floss our teeth, floss our teeth,
This is the way we floss our teeth,
Before we go to bed.

This is the way we call the dentist,
Call the dentist, call the dentist,
This is the way we call the dentist,
When we need a check-up."

We have all brushed and flossed our teeth, taken our fluoride, visited the dentist and we should remember to eat our sugary snacks only at meal time. Now we are ready to travel through Mother Gooseland with Mother Goose herself.

In fact, there she is standing on the platform waiting for us. Look! She sees us and is waving. I am surely getting excited about our adventure, aren't you?

The pilot, who happens to be the same cow who "jumped over the moon," has made a perfect landing and taxied right up to where Mother Goose is standing. Now that the door has opened, everyone should rush over to Mother Goose and shout, "Hi, Mother Goose."

(Note to teachers: Encourage the children to wave and say, "Hi, Mother Goose.")

"Children listen to what I have to say," she said
"To market, to market to buy some toothpaste,
Home again, home again tiggalty haste,
To market, to market to buy a toothbrush,
Home again, home again, now let's brush."

"But Mother Goose, we already brushed and flossed, rinsed with fluoride, and visited the dentist before we landed."

"Well in that case, let's go visit Mother Gooseland," Mother Goose said. "Our first stop will be in front of the world famous shoe house where:

"There was an Old Woman who lived in a shoe,
She had so many children she didn't know what to do.
To some she gave floss, and to others a brush,
And sent them to bed without any fuss."

Did you notice that everyone cleaned their teeth before they climbed into bed? And can you see the smile on their faces as they sleep? The reason, of course, is because their teeth are clean. We must hurry if you are going to see all of Mother Gooseland, so how many would like to visit Jack and Jill? All right, then let's go!

On our way to Jack's and Jill's, Mother Goose stops us and points out a:

"Little crooked man, who walked a crooked mile,
He had a crooked toothbrush, to brush his crooked smile,
He bought a crooked cat, which caught a crooked mouse,
And they all brushed with fluoride in a crooked little house."

Watching that crooked man, his cat, and mouse brush their crooked smiles is very interesting and after spending a few minutes watching we go on our way.

We reach Jack's and Jill's place without any more interruptions and just in time to watch as:

"Jack and Jill went up the hill
To fetch a pail of water.
Jack fell down and broke his crown,
And Jill came tumbling after.

Up they got,
And to the dentist did trot,
As fast as they could go.
He fixed Jack's tooth with a little gold crown,
That's the dentist's job, you know."

Do you wonder why Jill took Jack to the dentist? The reason is simple. Many years ago Jack broke his tooth and the dentist repaired it by putting a cap or crown on it. Jill took Jack to the dentist, because in falling down the hill he broke his crown again.

After leaving Jack's and Jill's hill, we see five little pigs and are fascinated watching as:

"This little pig went to the dentist,
This little pig stayed home.
This little pig had three cavities,
While this little pig had one.
And this little pig yelled, 'fluoride is great', all the way home."

They enjoy watching the last little pig, who is so happy and excited that he runs, jumps, kicks his heels together, and does two somersaults and three flip flops. Mother Goose explains that he is so happy "because the fluoride has made his teeth so strong and healthy, they will last forever."

"Mother Goose," someone asks, "I hear someone crying. Do you?"

"Let's check it out," she says. "Oh, my goodness! It isn't just one person, but several little girls are crying. This is serious. What should I do? Can anyone tell me what happened here?"

A brave little boy, who is trying to make the girls feel better, timidly raises his hand to tell Mother Goose why the girls are crying. He says,

"Georgie Porgie, pudding and pie,
Kissed the girls and made them cry;
And when the boys came out to play,
Georgie Porgie ran away."

Mother Goose wonders why a little kiss would make them cry, and all the girls say, "Because Georgie Porgie had bad breath."

The trip through Mother Gooseland is almost finished, but we are having so much fun that we don't want to leave. However, Mother Goose just received word that the cow wanted to jump over the moon again. "Oh dear," she says, "The last time she tried that, she got stuck and it took a week to get her down. I must talk her out of it or you won't have a pilot to take you home. Why don't you come with me, and on the way we will stop at Mary's school house:

"Mary had a little lamb,
With teeth as white as snow.
And everywhere that Mary went,
The lamb was sure to go.

It followed her to school one day,
Which was against the rule,
It made the children laugh and play,
To see a lamb brush his teeth at school.

The trip to Mother Gooseland is over now, and she was certainly a good guide. Let's tell her thanks.

Wait a minute! Before we go she wants to tell us one more thing.

Mother Goose's Message:

"Take care of your teeth by brushing, flossing, and using fluoride every day. Eat sweet things only with your meals, and visit your dentist regularly. Do these things, and your teeth can last forever."

(Note to teachers: Tell your students that Mother Goose needs a special helper. Invite a student to come up, then whisper Mother Goose's message in his/her ear and have him/her repeat it to the other students.)

2. Discuss the following:

   A. Why does Mother Goose want you to have clean teeth before you can see Mother Gooseland?
   B. If you were friends with the children who lived in the shoe, what would you tell them to do with their toothbrushes after they brushed their teeth?
   C. What message does the nursery rhyme about the little crooked man give to us?
   D. Why did Jill take Jack to the dentist?
   E. Why did one little pig have three cavities?
   F. Why did one little pig yell, "fluoride is great?"
   G. How can Georgie Porgie cure his bad breath?
   H. Why was it so funny to see a lamb brush his teeth at school?
   I. Who is responsible for caring for your teeth?
   J. Why should I follow the examples of the nursery rhyme characters and take care of my teeth?

Extensions:

1. Correct the absurdities in these sentences:

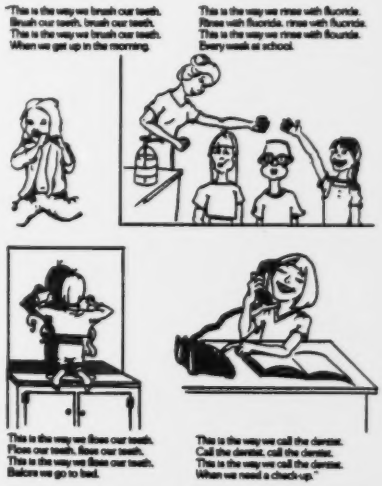
   A. We put fluoride ketchup on our toothbrush to clean our teeth.
   B. Pickle juice is the main ingredient in candy.
   C. The President of the United States fixes our teeth if they need to be repaired.
   D. Molars are the back teeth found in our nose.
   E. Dental floss is a special cat that helps us clean our teeth.
   F. Baby teeth are the first set of teeth a car gets.
   G. The sticky, gooey gunk found on teeth is called grease, and it causes tooth decay.
   H. If we want to prevent tooth decay, then we should brush and and floss our dog.
   I. When plaque and sugar mix together, they make acid. Acid is what causes flowers to grow in our teeth.
   J. It is the onions in toothpaste that strengthen our teeth.

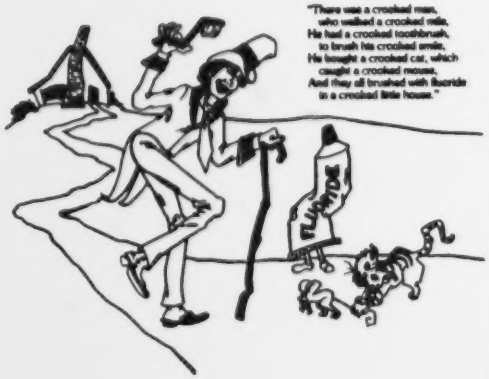
Dental Health Adventure with Mother Goose

"There was an Old Woman who lived in a shoe.
She had so many children she didn't know what to do.
To some she gave floss, and to others a brush.
And sent them to bed without any fuss."

CORNER MARKET
"To market, to market to buy some toothpaste.
Home again, home again jiggidy-jaste.
To market, to market to buy a toothbrush.
Home again, home again, now let's brush."

"Your Teeth must be clean
Or Mother Goose land can't be seen!"
"Hickory, Dickory, Dock,
The mouse ran up the clock.
It said to the children, "Your teeth must be clean.
Or Mother Gooseland can't be seen.'
Hickory, Dickory, Dock."


"This is the way we brush our teeth.
Brush our teeth, brush our teeth.
This is the way we brush our teeth.
When we get up in the morning.
This is the way we rinse with fluoride.
Rinse with fluoride, rinse with fluoride.
This is the way we rinse with flouride.
Every week at school.
This is the way we floss our teeth.
Floss our teeth, floss our teeth.
This is the way we floss our teeth.
Before we go to bed.
This is the way we call the dentist.
Call the dentist, call the dentist.
This is the way we call the dentist.
When we need a check-up."


"There was a crooked man,
who walked a crooked mile.
He had a crooked toothbrush,
to brush his crooked smile.
He bought a crooked cat, which
caught a crooked mouse,
And they all brushed with fluoride
in a crooked little house."
FLUORIDE

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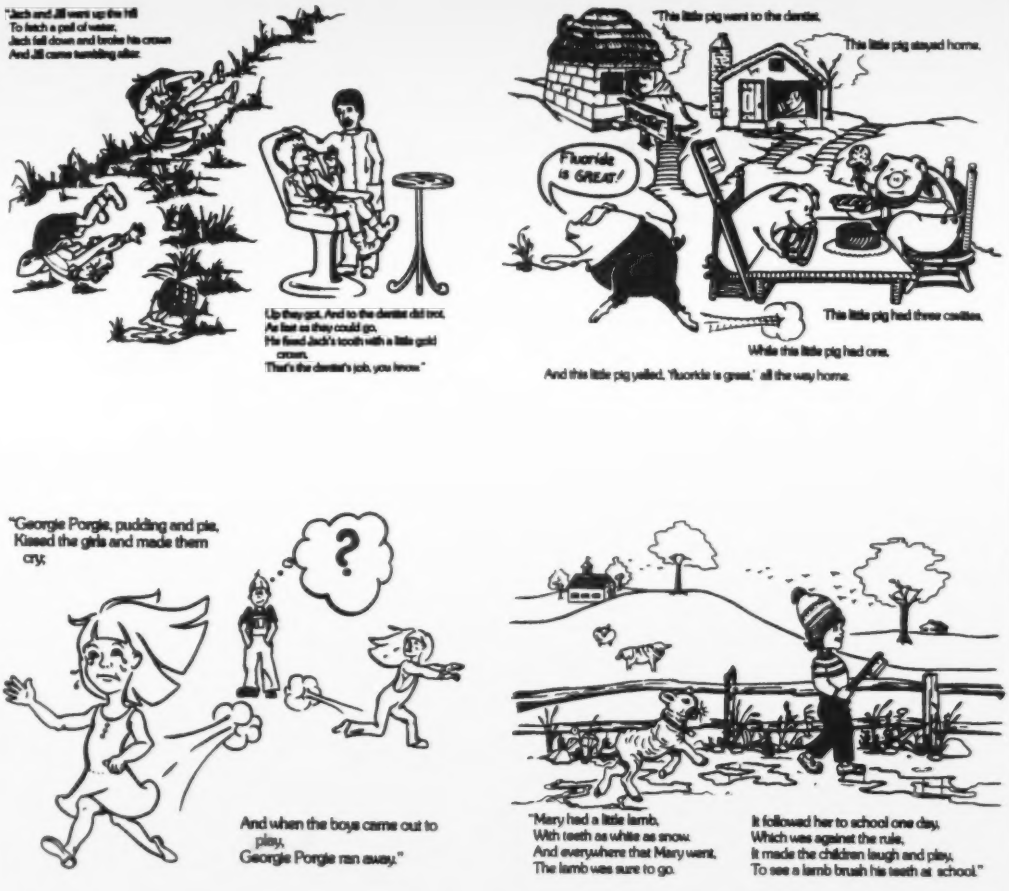
"Jack and Jill went up the hill
To fetch a pail of water.
Jack fell down and broke his crown
And Jill came tumbling after.
Up they got. And to the dentist did trot,
As fast as they could go.
He fixed Jack's tooth with a little gold
crown.
That's the dentist's job, you know."
"This little pig went to the dentist.
This little pig stayed home.
Fluoride is GREAT!
This little pig had three cavities.
While this little pig had one.
And this little pig yelled, 'Fluoride is great,' all the way home.
"Georgie Porgie, pudding and pie,
Kissed the girls and made them
cry;
And when the boys came out to
play,
Georgie Porgie ran away."
"Mary had a little lamb,
With teeth as white as snow.
And everywhere that Mary went,
The lamb was sure to go.
It followed her to school one day,
Which was against the rule,
It made the children laugh and play,
To see a lamb brush his teeth at school."

A set of nursery rhyme pictures have been printed on 8 1/2" x 11" cardstock to accompany this story. They will be made available, at no charge, as long as the supply lasts. These pictures can be used to supplement the story or to make an appealing dental health bulletin board. To order these pictures write to: The Oral Oracle, Dental Health Bureau, 44 Medical Drive, Salt Lake City, UT 84113, or call (801) 533-6179.

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ELEPHANTS AND FINGERS

3.22 The student will conclude that nutrition and eating habits may influence tooth decay.

Grade Level: K-2

Materials/Preparation:

None

Procedures:

1. Discuss ways students care for their teeth. List their suggestions on the chalkboard.

2. Read the story, "Pee Wee the Elephant". Have students listen for ways to care for teeth. Compare the methods found in the story with those listed on the chalkboard.

3. Teach the "Have Fun with Betty and Bobby" finger play.

Pee Wee The Elephant

Once upon a time there were three elephants living in the zoo. The great big daddy elephants's name was Blimpo. The mother elephant's name was Nimbo and the baby elephant's name was Pee Wee.

All of them had large ears that flapped when they walked and when they ate their food their large trunks reached out, picked up the food, and placed it in their mouths.

They loved to eat and every morning the zoo keeper brought them three big baskets full of vegetables—corn, tomatoes, celery, carrots, beans and apples, oranges and lots more, too. They would chew the vegetables and fruit with their great big elephant teeth. Crunch, crunch, crunch. Pee Wee just loved to hear the sound of those crunchy fruits and vegetables in his ear.

After Pee Wee finished eating his fruits and vegetables, he was so full his tummy hung nearly to the ground and he would walk around the yard saying, "I'm so full I can hardly move. But I'm still hungry. I'm hungry for all those snacks the little boys and girls feed me when they come to see me here at the zoo. They hold their little hands out and I pick up the snacks with my great big trunk and chew them up with my great big teeth. Peanuts, popcorn, corn chips, potato chips. Mmmmmmm, crunch, crunch, crunch. I just love those noisy sounds in my ear. Hurry up, Mr. Gatekeeper, and open up the door so the little boys and girls can come in to see me.

"Here's a little girl with some peanuts. Mmmmmmm, thank you," he mumbled. "These are really so good. And here's a little boy with some popcorn. I love popcorn, so I think I'll just stuff my mouth."

One day a new little girl came to the zoo with a sack in her hand. Pee Wee wondered what was in it so when she opened it he reached inside with his trunk and pulled out several little round things. They were different colors, red things, blue things, yellow things, orange things, and every other color of things you can think of. He put one in his mouth and he discovered a new taste. It was sweet and it was good, so he kept putting them into his mouth. He kept filling his mouth with things and before very long his mouth was stuffed full. His cheeks were all puffed out and he could hardly chew.

Now his mother, Nimbo, was watching Pee Wee and she was wondering what he had in his mouth. She called, "Pee Wee, what are you chewing?" Pee Wee tried to answer but his mouth was so full that all he could do was mumble something that his mother couldn't understand. However, mom had seen the little girl with the sack and she guessed that candy was in it and that was what Pee Wee had in his mouth.

"Pee Wee, you mustn't eat so much candy. The candy might stick to your teeth and the bacteria in your mouth will change the sugar into acid which will start a hole in your teeth. And one of these days you'll wake up with a cavity in your tooth and it will hurt terribly. Your daddy, Blimpo, ate too much candy, drank too much pop, and was chewing gum all the time until he got a terrible toothache and a swollen jaw. Do you want a cavity in your tooth?" Now, Pee Wee had never had a cavity and he didn't know how badly a toothache can hurt, so he just shrugged his shoulders and paid no attention to his mother's warning.

Every day the same little girl came to the zoo to visit Pee Wee and she brought him a sugary snack that he stuffed into his mouth. He would always save some of it so he could have an afternoon snack. Some of the candy kept sticking to his teeth and the bacteria in his mouth made acid which started making little cavities in his teeth. But Pee Wee didn't know this was happening because he couldn't hear or feel the little bacteria at work making tooth decay. They were too little to be heard and too little to be seen.

One morning Pee Wee woke up and his tooth really hurt. His jaw was swollen. He was frightened because he'd never had a toothache. He put his little trunk in the air and cried for his mother. "Wooooooo, wooooooo." His mother heard him cry and came running into his bedroom. "Pee Wee, what is the matter?" she asked. Pee Wee's tooth hurt so badly and his jaw was so swollen that he could hardly tell his mother what was wrong, so he opened his mouth and showed her the terrible cavity in his tooth.

"Oh, you poor little elephant. You've eaten too many sweets everyday and you didn't take care of your teeth. Now you have a cavity and we will have to call Doctor Mellow." Doctor Mellow was the dentist who had fixed Blimpo's tooth when he had a cavity.

Doctor Mellow went to the zoo to see Pee Wee. "I understand you have a problem," he said. "Open your mouth and let me take a look." Pee Wee opened his mouth and Doctor Mellow looked inside with his

little dental mirror. "Yes, Pee Wee, you've got a problem but I think I can fix it."

So Doctor Mellow took out his tools and worked on Pee Wee's tooth. He used his drill to drill out the decay and to prepare the tooth for the silver filling. When Dr. Mellow finished, Pee Wee's tooth felt much better and Pee Wee asked what he could do to avoid anymore cavities. He was told to brush and floss daily, visit the dentist regularly, avoid eating sugar, use fluoridated toothpaste, take fluoride tablets, and participate in the school fluoride mouth rinse program.

Pee Wee promised Doctor Mellow that he would take better care of his teeth. Dr. Mellow promised Pee Wee that if he would spend a few minutes every day doing the things he was just taught, he could keep his teeth forever. Pee Wee was told he should snack on things like potato chips instead of candy and sweets. This doesn't mean that he can't eat sweets, but he should eat them with his meals. Before Pee Wee left the office, Dr. Mellow gave him a fluoride treatment to help protect his teeth against decay. Dr. Mellow told him that fluoride was one of the best friends his teeth could have.

Now Pee Wee takes excellent care of his teeth. He started brushing and flossing and using fluoride every day and he visits the dentist regularly. He eats good snacks and saves the sweets to eat with his meals. Pee Wee is taking such good care of his teeth that they will last forever. Would you like to keep your teeth? Then follow Pee Wee's example.*

* Used by permission of the Arizona Department of Health

HAVE FUN WITH BETTY AND BOBBY
A Dental Health Finger Play

Narrative (Actions)

Bobby came out of his treehouse to see what he could see.
(Lift index finger of right hand)
He looked down the street, then up the street.
(Finger turns to right, then left)
He looked down on the ground, then up in the tree.
(Finger points down, then up)
And he saw papa and mama bird flossing their baby's beak.
(Move both hands back and forth as though flossing)

Bobby's friend Betty came out of her house to see what she could see.
(Lift index finger of left hand)
She looked down the street, then up the street.
(Finger turns right, then left)
She looked up the tree, then down on the ground.
(Finger points up, then down)
And she saw papa and mama dog brushing their baby's teeth.
(Move hand as though brushing)

Another friend, Randy, came out his front door to see what he could see.
(Lift little finger of left hand)
He looked down the street, then up the street.
(Finger turns right, then left)
He looked down on the ground, then up in the tree.
(Finger points down, then up)
And he saw papa and mama squirrel putting fluoride drops on their baby's tongue.
(Touch finger to the tongue as though using drops)

Betty noticed Bobby and said, "Look, look, do you see?"
(Left index finger turns towards right index finger)
They both looked up, and they both looked down.
(Have both fingrs look up and both look down)
And they were as excited as they could be.
(Index fingers bobbing rapidly up and down)
They waved to each other, the birds, the dogs, and the squirrels.
(Hands wave to each other, the birds, the dogs, and the squirrels)
Then they ran to their homes to brush and floss their teeth.
(Fingers imitate brushing and flossing, then disappear into their homes)
And they didn't forget their fluoride.
(Point both index fingers at the children)

(Have them take a bow by bending the wrist and have them clap for themselves, by using the index fingers and thumbs)

Extensions:

1. Distribute 3x5 file cards with "I CARE" printed at the top. Have students draw pictures that illustrate ways to care for teeth. Suggest that they tape these on the bathroom mirror at home.

SUGAR DISPLAY

3.22 The student will conclude that nutrition and eating habits may influence tooth decay.

Grade Level: K-6

Materials/Preparation:

1Ø test tubes with caps
Test tube holder
Sugar
Measuring spoon
Food list
Labels

The test tube holder can be made from wood or styrofoam. It should measure 11" x 4" x 1" with holes the diameter of the test tubes drilled 1" apart.

Procedures:

1. Have the children choose a favorite snack. Then find it on one of the sugar content charts found on the following page. Have the students put the corresponding amount of sugar in test tubes and label them. A striking impression is made when the children see how much sugar is actually in certain foods they enjoy eating. Involving the children is also very effective in keeping them interested in the discussion.

   Alternatively, you could have the test tubes pre-filled with sugar. This method allows the teacher to exercise more control over the finished product and you can stress the foods you feel strongly about.

2. Lead to the conclusion that sugar is in almost everything we eat. Discuss the need to limit sugar intake between meals. The discussion should include the concept that the more frequently sugar is eaten, the more dangerous it is.

Extensions:

1. Devise a poster and sugar display to depict the information from this lesson.

   NOTE: A simple sugar chart that the children can easily use has been included. However, if you want a more detailed chart you can obtain one by writing to the Dental Health Bureau, 44 Medical Drive, Salt Lake City, UT 84113, or call (8Ø1) 533-6179. There is no charge.

FOOD ITEM	SUGAR CONTENT IN TEASPOONS
8 ounces Soda Pop	
4 ounce piece Chocolate Cake with Icing	
1 Tablespoon Strawberry Jam	
Ice Cream Cone	
1 ½ ounce Chocolate Bar	
1 Glazed Donut	

FOOD ITEM	SUGAR CONTENT IN TEASPOONS
½ Cup Sherbet	
1 average piece Apple Pie	
1 Tablespoon Honey	
1 medium bowl Cold Cereal with ½ Tsp. Sugar	
2 sticks Chewing Gum	
1 Oatmeal Cookie	

LESS TOOTH DECAY

3.22 The student will conclude that nutrition and eating habits may influence tooth decay.

Grade Level: 2-4

Materials/Preparation:

Puppet script
3 sack puppets

Procedures:

1. Begin the activity with the puppet play. Discuss the play. What made Mr. Decay happy? What defeated Mr. Decay?

2. Place the following two formulas on the chalkboard. Discuss the process of decay:

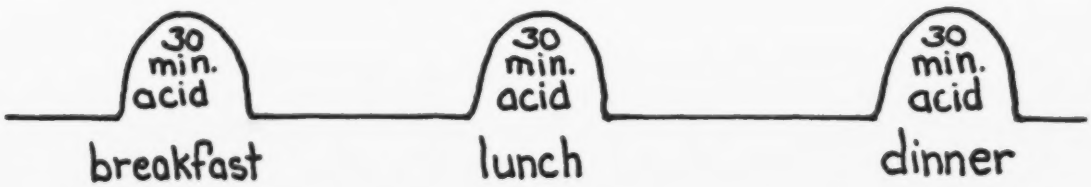
   Sugar + bacterial plaque = acid

   Acid + tooth = decay

3. Discuss how brushing with a fluoride toothpaste helps prevent decay.

4. Indicate that most tooth decay is initiated in the first 30 minutes after a sweet is eaten. This is the time period when the bacteria in the mouth produce acid.

   When we eat only three times a day, acid is only produced during those three 30-minute periods a day.



   Emphasize that each snack adds another 30 minute acid cycle.

5. Have students list the times they ate something in the past 24 hours. Then have them make a graph of acid exposure. Do a few examples on the chalkboard first.

LESS TOOTH DECAY

Puppet Play (4 characters)

BILLY: HI! I'M BILLY HAPPY TOOTH.

STORY TELLER: WHY ARE YOU HAPPY, BILLY?

BILLY: I HAVE JUST COME FROM THE DENTIST. I HAVE NO CAVITIES.

TELLER: THAT IS GOOD NEWS. WHY DO YOU THINK YOU HAD SUCH A GOOD CHECK-UP?

BILLY: BECAUSE I TRY TO FOLLOW THE "BIG FIVE" RULES.

TELLER: WHAT ARE THOSE RULES? CAN YOU TELL US?

BILLY: OH, YES. FIRST, HAVE A REGULAR CHECK-UP BY YOUR DENTIST - AT LEAST EVERY SIX MONTHS. THE DENTIST CAN FIND AND CORRECT SMALL PROBLEMS BEFORE THEY GET TO BE BIG. THEN...(enter Susie Bad Tooth. Mr. Decay sneaks in)

SUSIE: (EATING CANDY) BOO-HOO-HOO! I FEEL SAD. I HAVE A TOOTHACHE.

BILLY: SUSIE, YOU MUST GO TO THE DENTIST RIGHT AWAY. HE CAN MAKE YOUR TOOTHACHE GO AWAY.

SUSIE: OUCH! IT HURTS. I GUESS I HAD BETTER GO. MAYBE I'LL GET THERE TOMORROW. (goes right on eating candybar)

MR. DECAY: AH-HAH! MY WORK IS NOT DONE. SUSIE BAD TOOTH MAKES THINGS EASY FOR ME. I GET A LOT DONE WHEN SHE EATS CANDY EVERY 30 MINUTES.

BILLY: LISTEN, SUSIE, WOULD YOU LIKE TO STOP TOOTHACHES?

SUSIE: OH, YES! BUT HOW CAN I DO THAT?

MR. DECAY: OH, NO! IF SUSIE LISTENS TO BILLY, I'M LOST!

BILLY: WELL, FIRST GO TO THE DENTIST AND GET YOUR CAVITIES FILLED. NEXT, BRUSH YOUR TEETH OFTEN WITH A GOOD FLUORIDE TOOTHPASTE. FLOSS YOUR TEETH EVERY DAY AND WATCH YOUR BETWEEN MEAL SUGARY SNACKS, AND MOST IMPORTANT, MAKE SURE YOU DRINK WATER WITH ENOUGH FLUORIDE IN IT OR TAKE YOUR FLUORIDE TABLET EVERY DAY.

MR. DECAY: RATS! I'VE LOST ANOTHER CUSTOMER!

THE END

Puppet Patterns

HIDDEN SUGAR

3.22 The student will conclude that nutrition and eating habits may influence tooth decay.

Grade Level: 2-6

Materials/Preparation:

None

Procedures:

1. Hidden sugar is found in most foods and is therefore impossible to completely avoid. However, this does not mean that cariogenic (cavity causing) foods should be eaten whenever the urge strikes. On the contrary, sweets should be eaten less frequently, preferably with meals rather than between meals.

   Teach your students that every time sugar is eaten it is changed into acid by bacterial action, which will attack the teeth. Each time acid is formed it will stay in the mouth 30 minutes, advancing tooth decay all the while. It is not the amount of sugar that is eaten, but the frequency with which it is eaten that creates the problem.

   As teachers, we should not be guilty of teaching the children that they must give up sweets, advice which they will not and cannot follow, rather we should teach them to eat sweets sparingly and to limit them to their meals.

   This activity has been developed to help teach the following concepts:

   A. Sugar is hidden in many of the foods we eat.

   B. Sugar is found in many forms, all of which are cariogenic, i.e., table sugar, dextrose, corn syrup, corn sweetener, brown sugar, honey.

   C. Reading labels will help identify foods that contain sugar.

   D. Since sugar cannot be completely avoided, sweets should be eaten only with meals, in order to minimize the number of acid attacks each day.

   E. We should snack on sugarless foods that won't promote decay. (No acid attack.)

2. Read the story out loud. Have the students raise their hand every time you read a food that contains sugar. Re-read the story at least once.

There are only five sugarless foods in the story. They are: saltine crackers, Frito's, taco shell, tuna fish, and fish fillets. Of these only tuna fish does not contain starch that might turn to sugar if left in the mouth.

"MY LITTLE SALTINE"

"My little **Saltine Cracker**, would you like to race the **Ritz Crackers** to the **Wheat Thins**?"

"It sounds like **Mounds** of fun but first let's **Shake and Bake** to the **Frito** store and munch on **Nacho's** for extra energy. While we are there we can eat a **T.V. dinner** and some **Beef Enchilada's.**"

After finishing their snack, **Mr. Goodbar** started the race. As they were racing, the little **Saltine** slipped on **Low Fat Yogurt** and before she could stand up, a big dog mistook her for a **Gainesburger.** With little **Saltine** gone, **Pringle** (her Potato Chip boyfriend) didn't know what to do.

When all of a sudden **Krackel Candy Bar** came riding up the street on a **Carnation Tuna Fish**, introduced **Pringle** to **Honey** and together they climbed into a **Taco Shell** and sailed to Hawaii. Their little boat got them to Hawaii where they were served **Hawaiian Punch** by women in little grass skirts.

They were excited to be in Hawaii and they were looking forward to eating some **Fresh Pineapple** and **Fish Fillets.** But instead they got **Franco-American Spaghetti, Cheetos,** and **Stove Top Stuffing.** For dessert they had a **Sweet Roll** and a **Granola Fruit Bar.**

Canned Corn, the owner of the restaurant, was sorry that they were disappointed so he offered them a free **Pepperoni Pizza.**

Pringle and **Honey** were no longer hungry and all they wanted was to get home, but their **Taco Shell** boat was ruined and wouldn't float. **Aunt Jemimah** came to the rescue by making a **Pancake Boat** and loading it with **Syrup.**

They hopped on the **Pancake**, waved good-bye to Hawaii, and made it home in time for **Big Hunk's** supper, a big **Hamburger**, with lots of **Ketchup** and **Soda Pop.**

The evening was topped off with a **Hershey's Chocolate Kiss.**

Extensions:

1. Assign students to read labels of foods in the cupboard at home to determine which do not contain sugar.

GROCERY STORE

3.22 The student will conclude that nutrition and eating habits may influence tooth decay.

Grade Level: 3-6

Materials/Preparation:

Play Money (Dental Dollars)
Table (to set up miniature grocery store)
Masking Tape (for price labelling)
Groceries (the following list is just a suggestion)

Macaroni & Cheese	Bread
Fruit Juice	*Peanut Butter
*Tuna Fish	*Vegetables
Jam	*Soup
*Pork & Beans	Soda Pop
*Crackers	*Croutons
Candy Bar	*Fresh fruit
*Wheat Chex	Cookies
Potato Chips	*Corn Chex
*Milk	Spaghetti
*Pretzels	*Popcorn
*Cheese	Donuts
*Nuts	Ice Cream
Popsicles	

*Non-decay producing food

Procedures:

1. Set up a grocery store with a variety of foods. They may be the real thing or simulated.

2. Indicate that the purpose of this activity is to examine the math-nutrition implications of dental health.

   Use your imagination to vary this activity to suit your own needs. One way is to select two students, one to act as the store clerk and the other to be the customer. The customer is given a pre-determined amount of play money and told to buy groceries for his lunch, but he must stay within his budget. Let him choose whatever he wants without direction from the teacher. At the completion of this role play, you can discuss the nutritional benefits or problems with his lunch. The clerk should add up the bill and make the necessary change (if you wish you can also have the class check the work of the clerk). The clerk should determine whether the customer has stayed within his budget.

3. At this point, present the desired concepts in budgeting, math, nutrition, and dental health. For example, if you are teaching percentages, have them figure the sales tax on the purchase.

4. Select two students (customer and clerk) and the assignment is to buy some snacks for a class party. Again they must stay within their allocated budget, but they are free to select any food they wish.

5. Discuss the nutritional value in the snacks they choose and the effects their snacks may have on the teeth. Include other concepts as desired.

6. The assignment is the same as before, except the customer must buy non-cariogenic (non-decay producing) snacks for a class party.

7. Discuss the benefits of using this kind of snack for a class party. Review the list of non-cariogenic foods.

Extensions:

1. The following snack ideas are being included to give you an idea of some tasty snacks that will not cause tooth decay. These snacks can be used with a classroom tasting party or they can be mimeographed off and given to the students to take home and share with their parents.

   Research indicates that a behavior change occurs more frequently in those children whose parents are involved with part of the lesson. You might want to think of a dental activity where the parents can come to your class and participate and afterwards these snacks can be served as refreshments.

   We hope you enjoy these snacks and that you will use your imagination and creativity to integrate them into your dental health unit. They can add a dimension to your dental lesson that is fun and educational.

   These snacks were taken from the book, "The Taming of the C.A.N.D.Y. Monster," Copyright 1978, by Vicki Lansky, with permission from Meadowbrook Press.

Cheese Spread

1 stick (1/2 cup) butter or margarine, softened
1 cup cottage cheese
garlic powder

Blend butter with cottage cheese. A blender or baby food grinder will give you a smoother consistency than whipping with a fork. Add garlic powder to taste. Refrigerate in a covered container.

Popcorn

Popcorn is good tasting, fun to make, and a popular sugar-free food. It is low in calories, at least until you add coatings. If you don't have a popcorn maker, you can make do nicely with a large covered pot on the stove top using 1/4 cup of oil to 1/2 cup popping corn. Forget salt and try any one of the following for a change of taste.

Toppings: In addition to melted butter topping, try sprinkling grated parmesan or American cheese on popcorn. Or mix with peanuts, or cinnamon.

Crunchola Mix

Mix: 4 cups crunchy cereal (Cheerios, Corn Chex, etc., or any combination)
1 cup peanuts or mixed nuts
1 cup pretzel sticks, the smallest size
1 cup seasoned croutons

Combine: 1/2 cup salad oil or 6 tbsp. melted butter
2 tsp. Worchestershire Sauce
1/4 tsp. garlic power

In a large shallow pan coat crunch ingredients with the combined oil and seasonings. Heat in oven at 250 degrees for about 45 minutes, stirring every 15 minutes. Spread on absorbent paper to cool.

Swords

Banana slices, cheese slices, etc., can be "speared" on thin pretzel sticks.

Snow Cones

Crush several ice cubes with 1/2 cup water in a blender, turning it on and off to achieve a snowy consistency. Pour over the "snow," which has been scooped into paper cups, 2 tbsp. of thawed frozen juice or concentrate.

Frozen Bananas

1 banana
2 Popsicle sticks
Optional: Peanut butter, chopped nuts

Peel one firm, ripe banana. Cut in half, or even thirds. Insert one stick lengthwise through the center of each section. Wrap in plastic and place in the freezer. When ready to eat, cover with peanut butter and roll in chopped nuts.

Orange Froth

3 cups water
1 6 oz. can frozen orange juice concentrate, thawed
1 cup powdered dry milk

Optional: nutmeg, coconut powder, raw egg or banana. Whip ingredients together in a blender and serve.

Frozen Fruit Slush

1 can of fruit, frozen

Defrost slightly by holding can under hot running tap water for a minute or two. Open can and put contents into your blender. Blend to slush consistency and serve in a glass with a straw.

Hint: Try to use fruits packed in light or natural syrup to avoid unnecessary sugar.

Orange Juice-Sicles

1 6 oz. can frozen orange juice
3 cans cold water
1 egg white
popsicle sticks and cups

Mix in blender. Pour into molds, insert sticks and freeze.

LESS SUGAR

3.22 The student will conclude that nutrition and eating habits may influence tooth decay.

Grade Level: 3-6

Materials/Preparation:

Apple
Marshmallow
Knife

Procedures:

1. It is generally acknowledged that sugar plays a major role in acid production by plaque. It is also acknowledged that sugar cannot be eliminated from the diet. The recommendation is to decrease frequency of sugar intake and control type of sugar. Demonstrate the differences in foods and the effect on teeth by cutting an apple and then a marshmallow with a knife. Observe the knife after each cutting. Student should infer that materials stick to the teeth in a similar way.

2. Have a number of students eat the same two foods and describe how their teeth feel. Which food will cause the longer acid exposure?

3. Discuss why eating an apple at the end of a meal might help clean the teeth.

Extensions:

1. Arrange with a grocery store manager to present a display of foods that make good non-sweet snacks.

2. Make a bulletin board showing nutritious snacks.

THE MAKING OF A HEALTHY TOOTH

3.22 The student will conclude that nutrition and eating habits may influence tooth decay.

Grade Level: 4-6

Materials/Preparation:

Worksheet

Procedures:

1. Distribute the worksheet. Ask students to see if they can name the mystery things. **Answers:** 1. Fluoride, 2. Calcium, 3. Phosphorus, 4. Vitamin C, 5. Protein.

2. Discuss fluoride, calcium, phosphorus, vitamin C, and protein as related to healthy teeth.

Extensions:

1. Write Haiku poems using the Healthy Teeth vocabulary as subjects. Haiku has five syllables in the first line, seven in the second, and five in the third.

   Example:

   Fluoride in water

   Helps to make my teeth harder

   No more cavities

WORKSHEET: The Making Of A Healthy Tooth

NAME_____

Healthy Teeth

1. The first mystery thing is found in some foods, in some water, is sometimes added to water, may be in toothpaste.

   What is it? F/__/__/__/__/__/__/__/__/
   (eight letters)

2. The second mystery thing is found in milk and milk products, fish, and enriched or whole grain bread.

   What is it? C/__/__/__/__/__/__/__/
   (seven letters)

3. The third mystery thing is found in foods such as meat, milk, cheese, eggs, cereals, and vegetables.

   What is it? P/__/__/__/__/__/__/__/__/__/__/
   (ten letters)

4. The fourth mystery thing is found in citrus fruits, tomatoes, and helps keep the gums healthy.

   What is it? V/__/__/__/__/__/__/__/ __/
   (seven letters)

5. The fifth mystery thing is found in meat, eggs, beans and peas, fish and poultry. It helps protect against infection and damage to the gums.

   What is it? P/__/__/__/__/__/__/__/
   (seven letters)

Topic 3.3: Preventing Periodontal Diseases

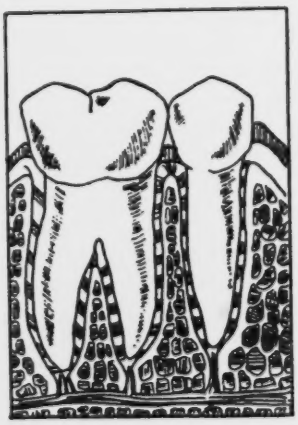
Program Goal 3.Ø: To develop an understanding of tooth problems and how to prevent or alleviate these problems.

The greatest cause of tooth loss is periodontal disease. According to Dr. Henry M. Goldman, it has been estimated that periodontal disease is responsible for the loss of more teeth than all other causes combined and from three to seven times more than dental caries. The loss of teeth is no longer considered a natural component of the aging phenomenon, but is recognized as representing the result of a pathologic process. Periodontal disease starts during the childhood years. Contrary to common belief, the disease affects children as well as adults. It is, therefore, important to teach children about this problem. Studies have shown that more than half of all school-age children suffer from the early stages of periodontal disease, predisposing them to irreversible gum disease and loss of teeth in their adult years.

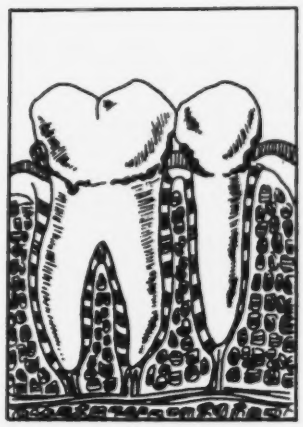
What is periodontal disease? It is a chronic inflammation of the gum tissue which progresses over a period of years to destroy the connective fibers and bone around the roots of the teeth, resulting in the loss of teeth. In its early stage, it is referred to as gingivitis. This is an inflammation of the gums. They become red and swollen, stand away from the teeth, and bleed easily when touched. When the gums begin to pull further away from the teeth and the supporting bone is dissolved away, it is called periodontitis. Gingivitis can be reversed by proper daily brushing and flossing, but periodontitis requires expensive treatment and the lost bony support can never be regained.

The primary cause of periodontal disease is plaque. Bacteria in plaque produce chemicals that may irritate the gums, and over time, seriously damage the structures that hold the teeth in place. Figures 1 through 4 illustrate the role plaque plays in the progression of periodontal disease.

1. Healthy gingiva (gum tissue) and bone anchor the teeth firmly in place. (Figure 1).

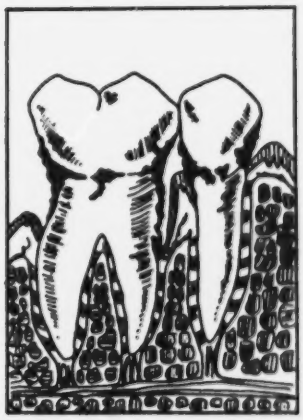


2. The byproducts of plaque irritate the gums. This can cause the gums to become red, tender, and swollen and to bleed easily. (Figure 2).



3. Unremoved plaque hardens into a deposit called calculus (tartar). Calculus can be a contributing factor in periodontal disease, for it makes the removal of new plaque more difficult. Calculus deposits can be removed only by a dentist or dental hygienist.

   The tissue that attaches the gums to the teeth is destroyed by the irritants in plaque. The gums pull away from the teeth, forming small pockets that become filled with more plaque. (Figure 3).



4. Plaque moves down along the roots of the teeth, making the pockets deeper.

   Eventually, the irritants may destroy the bone supporting the teeth. Unless treated, the affected teeth become loose and fall out or must be removed by a dentist. (Figure 4.)

Although periodontal disease is caused by plaque, other factors also influence the disease. Physical and chemical irritants in the mouth can damage the gums and supporting tissue. Food caught between the teeth, toothpicks, improperly used toothbrush, malocclusions, defective fillings, or poorly fitting dentures can irritate gums and supporting bone. Smoking and smokeless tobacco may also irritate tissues or damage the gums.

Brushing and flossing are the two best weapons against periodontal disease. Brushing helps remove plaque from the outer, inner, and chewing surfaces of the teeth. Daily flossing removes plaque from the areas along the gum line and between the teeth. Early stages of periodontal disease can often be reversed by daily flossing.

A well balanced diet will contribute to keeping oral tissues healthy. Regular professional cleaning of teeth helps keep tartar buildup down. If any of the following indicators of periodontal disease are noticed, an appointment should be made with the dentist immediately.

1. Gums that bleed when you brush your teeth.

2. Gums that have pulled away from teeth.

3. Gums that are tender, red, or swollen.

4. Pus that emerges when the gums are pressed.

5. Permanent teeth that are loose.

6. Any change in the way your teeth fit together when you bite.

7. Recurring bad breath.

The method of treatment of periodontal disease depends upon how far the disease has progressed. Even in the early stages, professional help is essential.

BRUSHING

3.31 The student will investigate the influence of brushing and flossing in preventing periodontal disease.

Grade Level: K-3

Material/Preparation:

Prior to this activity, assign students to bring a toothbrush from home. Label each with name on masking tape. Make egg carton storage racks by punching holes in each section and tape top to the wall.

Handout

Procedures:

1. Begin the activity by discussing toothbrushing. Have a few students demonstrate or explain how a person should brush his/her teeth. Ask why they brush their teeth and how often. Ask why they use fluoride toothpaste. Accept all techniques and answers. Indicate that today's lesson will help them understand why we brush our teeth.

2. Review the concept of PLAQUE and what it does to the teeth. Indicate that we brush our teeth to remove disease-causing bacteria.

3. Distribute the "How to Brush Your Teeth" handout. Discuss the techniques illustrated.

4. Get toothbrushes and practice brushing. Toothpaste is not really required for classroom plaque removal.

5. Check to see if any students have bleeding gums. This could be caused by an improper toothbrush, poor technique, or may indicate periodontal disease. Examine all toothbrushes. Dentists recommend a brush with a straight handle, a flat brushing surface, and soft round-ended bristles. Soft bristles are less likely to injure the gums.

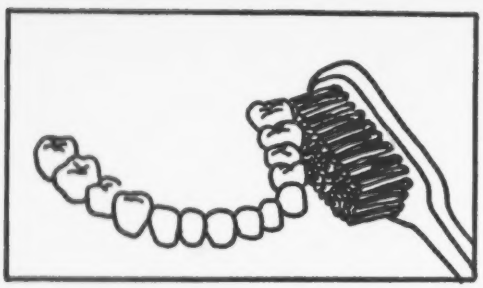
Extensions:

1. Set up a parents' night where students put on dental skits from this book and demonstrate their ability to control plaque.

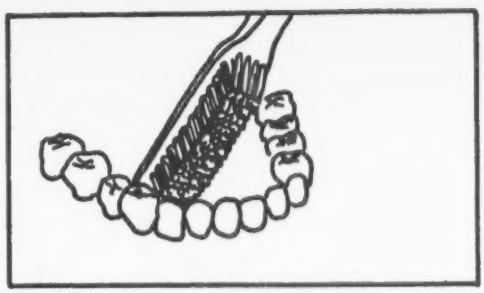
HANDOUT: Brushing

NAME_____

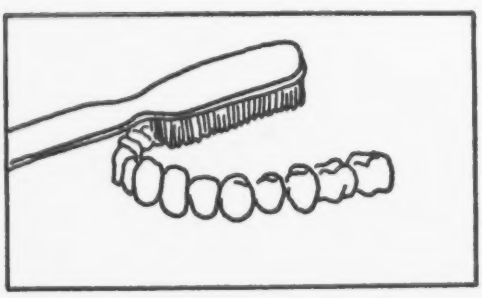
HOW TO BRUSH YOUR TEETH

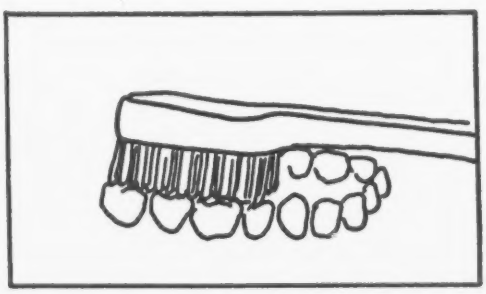


Place the head of your brush alongside your teeth, with the bristle tips angled against the gum line. Move the toothbrush back and forth with several gentle strokes. Make sure every tooth is brushed.



Brush the insides of front teeth with the "toe" (front part) of the brush, wiggling gently.





Brush the outer, inner, and chewing surfaces of your upper and lower teeth.

BRUSHING AND FLOSSING

3.31 The student will investigate the influence of brushing and flossing in preventing periodontal disease.

Grade Level: 3-6

Materials/Preparation:

2 pillow cases
1 broom
1 jumprope
Black construction paper
Masking tape
Dental floss
2 worksheets

Procedures:

1. Begin the activity by reviewing the following:

   bacterial plaque + gums = gingivitis

   gingivitis + neglect = periodontal disease

   Indicate that brushing and flossing are the recommended ways to remove plaque.

2. Choose two students to role play teeth. Place pillow cases over them and have them stand close together with their backs to the class. Use masking tape to place pieces of black paper on the teeth. First use the broom to gently remove the plaque (black paper) from the teeth. Repeat the process with the jump rope. Emphasize the need for floss (jump rope) to get between the teeth.

3. Distribute the Brushing Technique worksheet. Complete and discuss the worksheet. **Answers:** (1) f, (2) c, (3) d, (4) e, (5) b, (6) a

4. Distribute dental floss and the Flossing Technique worksheet. Follow the sequence outlined.

Extensions:

1. Practice the "spoof" methods of toothbrushing outlined on page #69. The purpose of these "spoofs" is to have fun.

2. Make your own tooth powder by combining 3 parts bicarbonate of soda and 1 part salt. Flavor with oil of peppermint.

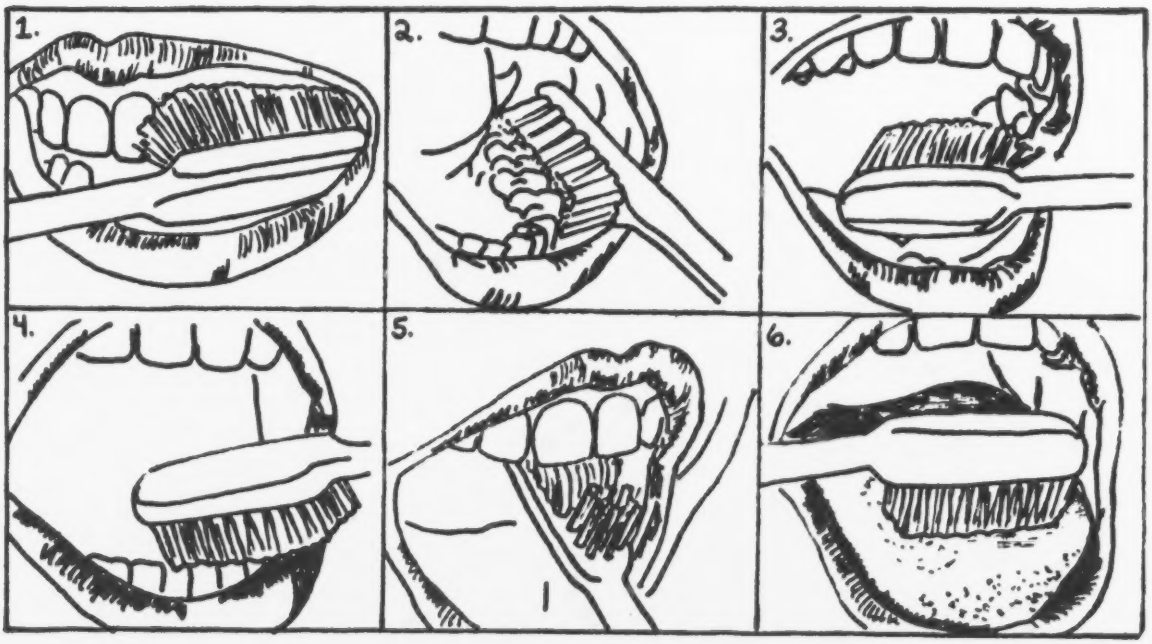
3. Discuss claims made by toothpaste and sugarless gum advertisements from magazines.

WORKSHEET: Brushing and Flossing

NAME_____

BRUSHING TECHNIQUE

Label each picture using the correct label from below. Place the letter in the box containing the correct picture.



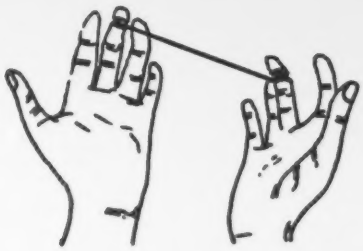
Picture Labels:

a. Brush tongue gently.
b. Brush inside of front teeth by holding the brush straight up and down.
c. Brush the outside of upper and lower teeth and gums.
d. Brush chewing surfaces of all teeth.
e. Brush inner part of lower and upper teeth. Brush gums.
f. Tilt toothbrush against the teeth where teeth and gums meet.

WORKSHEET: Brushing and Flossing

NAME_____

Flossing Technique:



a. Break off about 18 inches of floss.

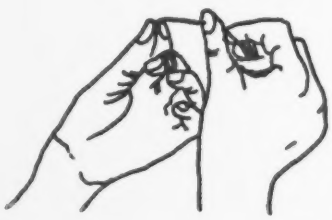
b. Wind most of the floss around one of the middle fingers.

c. Wind the remainder around the other middle finger to "take up" the floss as it becomes soiled.

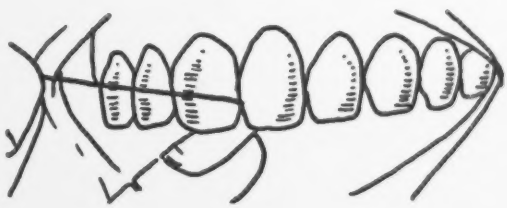
d. Use thumbs and forefingers with one inch or less of floss between them to guide floss between the teeth.

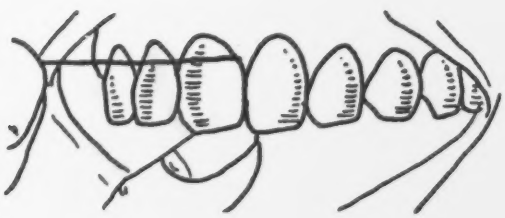
Lower teeth

Upper teeth



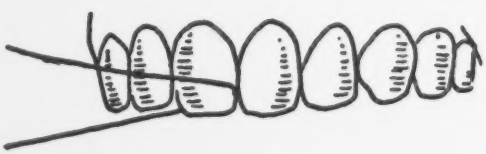
e. Hold floss tightly (no slack) and use a gentle sawing motion to insert floss between two teeth. Never "snap" the floss into the gums.





f. When floss reaches the gum line, wrap it into the space between the gum and tooth making a "C" with the floss.

g. Pull the floss tight against the tooth and move the floss away from the gum by scraping the floss up the side of the tooth. Do the same procedure on the adjacent tooth before you remove the floss.



h. Repeat steps (d) through (g) for all other teeth.

"THE SPOOF"

The Borrowed Hand Method

As the instructor you should hold the toothbrush while a student volunteer brushes his teeth. This toothbrushing technique is extraordinary, so it requires that the student and the teacher work together. The teacher should hold the brush at the waist level of the student so that he must bend in order to brush his teeth. (Have him hold his hands behind his back.)

Follow the Leader Method

This method begins the same as the "Borrowed Hand" method. Instead of just standing and letting the student foam at the mouth, the instructor leads the student through a toothbrushing/exercise program by walking backwards, carefully guiding the student past classroom obstacles such as chairs, desks, and other students. The student keeps his hands behind his back, bending at the waist, and rhythmically brushes his teeth as he or she bobs the head up and down over the toothbrush. This is an excellent exercise for strengthening the teacher's leg and arm muscles and the student's leg and neck muscles.

The Three Musketeers Method

Now, perhaps you won't have any students ambitious enough for the "Borrowed Hand" method. In that case, choose someone who likes to smile, have a second student place the toothbrush next to his teeth, and a third student vigorously shake his head back and forth. The real advantages of this revolutionary brushing technique include: (1) cleaning the student's hand as the juices from the mouth run down the toothbrush handle; and (2) reducing the classroom noise level by 33%. (That is, if 1/3 of the class has a brush in their mouths, the class can make only 2/3 as much noise.)

Triple Threat Toothbrushing Method

Triple Threat Toothbrushing is a proven method of helping the teacher make the world's most boring subjects (exercising, studying, and toothbrushing) exciting. To demonstrate this method, sit (or have a limber student sit) on a table or desk and place the toothbrush between your feet and draw them as close to the body as possible. Next, put a book in front of your feet to read as you laboriously brush your teeth with the toothbrush you are holding between your feet. This brushing technique can be accomplished simply by bending at the waist and stretching those back muscles. This exercise is excellent for trimming the waistline, strengthening the neck, and improving eye-mouth coordination. If done rapidly enough, it can be used as an aerobic exercise. There is, however, one disadvantage: the students may enjoy studying, exercising, and toothbrushing so much that they will frequently be late for school.

The Dangle Method

Brushing with a string will help your students brush their teeth while enjoying their stretching and warm-up exercises. The best way to do this exercise is to put a string through the hole at the end of the brush handle then tie it onto a stick. Let the toothbrush dangle a few inches above the student's mouth so that he has to stand on his toes and stretch in order to brush. The toothbrush should hang freely without the student grabbing or holding it. Besides being an effective stretching exercise, this technique helps clean the student's face and ears when the brush happens to miss the mouth. There is a good chance that several mothers will call to thank you for helping their kids finally clean their faces and ears.

Conclusion

This activity is meant to make toothbrushing fun by adding some humor. This is done by involving your class in these ridiculous toothbrushing role plays. Your students will immediately spot THE SPOOF, and have some fun.

BRUSHING AND FLOSSING CONTRACT

3.31 The student will investigate the influence of brushing and flossing in preventing periodontal disease.

Grade Level: 3-6

Materials/Preparation:

Sample contract worksheet
Cards

Procedures:

1. Contracts have been used effectively in various behavior modification programs, so why not try it with a dental health unit? This concept, if used, must be taken seriously, and both parties must fulfill their part of the agreement. Otherwise, the probability of the concept working will be very poor.

   Some points to remember in contract writing include:

   A. Work with only one or two possible behaviors (brushing and flossing, taking fluoride, or visiting the dentist.)

   B. Describe the desired behavior very clearly (i.e., brush twice a day with fluoridated toothpaste and floss every tooth once each day.)

   C. Clearly identify the rewards as well as the penalties. (Remember that rewards can motivate better than punishments can.)

   D. Write the contract so that everyone can understand it.

   E. Be consistent, and make sure that the rewards are given only if the student earns them.

   On the next page is a sample contract worksheet that you can use with your students. Use your creativity and come up with some original rewards. You might even let the students suggest their own.

   You are encouraged to individualize the contracts as much as possible. Perhaps paragraph Number 1 could be the same for the entire class, while the individual could make his or her own suggestions for paragraphs 3 and 4 (with your approval). Use your creativity in developing ideas for this activity, then share them with us so we can pass them on to others. See the sample contract that follows for ideas. These contracts can be obtained from the Dental Health Bureau. Write to 44 Medical Drive, Salt Lake City, UT 84113, or call (801) 533-6179.

ORAL ORACLE DENTAL HEALTH CONTRACT

BE IT KNOWN TO ALL PEOPLE:

This contract, made on this _____ day of _____, 19__, between _____, hereafter called the student, and _____, hereafter called the teacher, witnesseth that the student and teacher do jointly agree to honor, uphold and carry out to the best of their ability, the promises made in this contract, to wit:

1. I, the student, agree to take excellent care of my teeth for the period of _____ weeks begining on _____. I will faithfully follow the principles of good oral hygiene, as has been taught by the teacher, which include:
   A.
   B.
2. I, the student, agree to involve my parents by having them return a signed note to the teacher stating that I have fulfilled the agreements of this contract.
3. I, the student, agree to do the following if all the conditions of this contract are not met:
   A.
   B.
   C.
4. I, the TEACHER, agree that, if the student faithfully follows the principle's of good oral hygiene, as outlined in paragraph one, I will:
   A. Heap lots of praise on the student.
   B. Reward the student by:
      1.
      2.
      3.
      4.

We have both read the terms and conditions of the above contract and agree to them as written.

_____
Student

_____
Witness

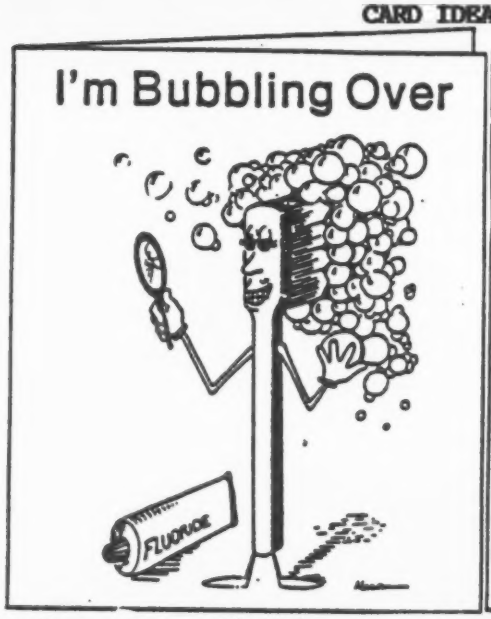
_____
Teacher

_____
Witness

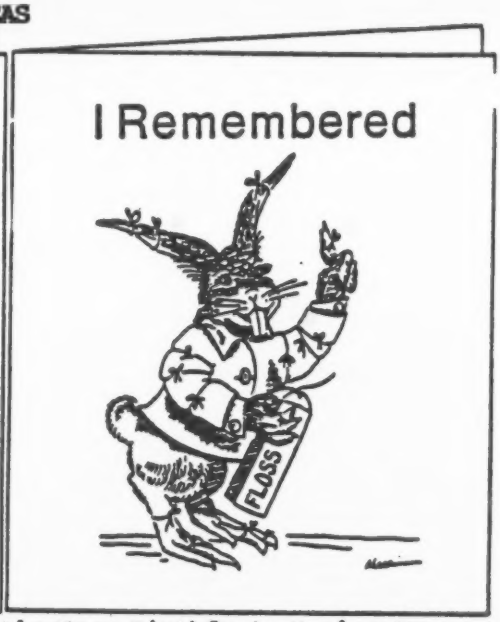
Extensions:

1. Give out birthday cards, special occasion cards, or completion cards during the term of the contract. Birthday cards can be obtained from the Dental Health Bureau by writing to 44 Medical Drive, Salt Lake City 84113, or calling (801) 533-6179, or they can be made up from the card ideas that follow.

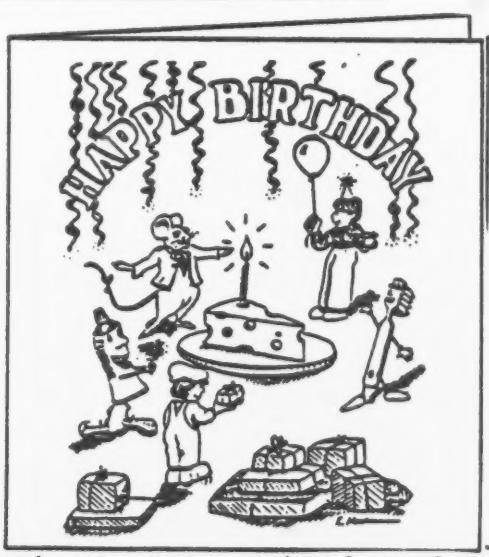
CARD IDEAS



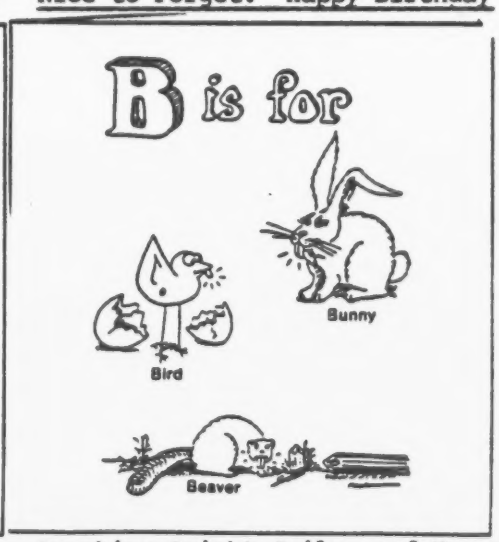
Wishing You a Happy Birthday



It's Your Birthday! You're Too Nice to Forget! Happy Birthday



Wishing You A Happy Birthday and Many Smiles Throughout the Year



Brushing Bright Smiles and Happy Birthday

FLOSS IS BOSS

3.31 The student will investigate the influence of brushing and flossing in preventing periodontal disease.

Grade Level: 3-6

Materials/Preparation:

None

Procedure:

1. "Floss is the Boss", is a follow-along story written by J. Dennis Kamholtz, Ed.D., and Bill Wood, both of whom are instructors at the University of Maine. This story stresses the importance of good oral hygiene by using a combination of funny sounds and a variety of motions. It leads the students to the conclusion that flossing is the most effective thing that they can do to remove plaque and debris from their teeth. Use this story and your students will enjoy it.

   PREPARE FOR MOTIONS AND SOUNDS

   Whenever the words **teeth, tongue, whistle, toothbrush, mouthwash** and **floss** are mentioned, certain sounds and motions follow. Select one student or a group of students to represent each of these six words. As the story is read, the appropriate sound and motion is made by the appointed student or group.

   For example:

   1. **TEETH**
      Sound--clickity, click, click, clickity, click, click.
      Motion--Move your fingers to the side of your face, as if it were a gigantic mouth and then smile while rapidly opening and closing the mouth, and clicking the teeth together.

   2. **TONGUE**
      Sound--Slurp, slurp, slurp, slurp
      Motion--Rapidly move your tongue in and out of your mouth (this will make the slurping sound).

   3. **WHISTLE**
      Sound--A long exaggerated whistle

   4. **TOOTHBRUSH**
      Sound--Ping
      Motion--produce an imaginary toothbrush from your pocket and put some imaginary fluoride toothpaste on it and brush your teeth.

5. **MOUTHWASH**
   Sound—gargling sound
   Motion--swish it around the mouth, gargle and spit it into the sink.

6. **FLOSS**
   Sound—"Floss is the boss, floss is the boss"
   Motion--wiggle your body back and forth with your arms extended, as if you were flossing a gigantic tooth.

READ THE STORY, SLOWLY

FLOSS IS THE BOSS*

This is the story about some **teeth** and a **tongue.** Now the **teeth** and the **tongue** work together to help chew your food. One day, the **teeth** and **tongue** were chewing on some_____and some_____. (Have the students name a favorite food.) The **teeth** and **tongue** decided they would get as clean as a **whistle.** So, they took out a **toothbrush.** And they brushed their top **teeth** and their bottom **teeth** as well as their **tongue.** But when they were through, there were still some tiny bits of food left on the **teeth** and that's bad news!

So they got out the **mouthwash** and they swished it around in their mouth and they swished some more. But when they were through, there were still some tiny particles left on the **teeth,** and that's bad news!

So there was nothing left to do but to get out the dental **floss** and they flossed their **teeth.** And when they were through, their **teeth** and their **tongue** were both as clean as a **whistle!**

That's because—

Who's the boss? (repeat the appropriate flossing sound and motion)

Extensions:

1. Teach the students the following song, "Little Johnny Had a Toothbrush," sung to the tune, "Reuben, Reuben".

"Little Johnny Had a Toothbrush"

Little Johnny had a toothbrush,
And he hung it on the wall.
Morning, noon, and night it hung here,
And he used it not at all.

Then one day while at the table,
He began to scream and cry,
Mother, mother, I've a toothache,
And I think that I shall die.

Mother took him to the dentist,
But the dentist shook his head.
Too late, too late, too late,
Johnny,
You will lose this one, he said.

It's too late for little Johnny,
But it's not too late for you.
If you use your toothbrush daily,
Now will you, and you and you?

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FLOSS CONTRACT

3.31 The student will conclude that brushing and flossing are effective in preventing periodontal disease.

Grade Level: 4-6

Materials/Preparation:

Worksheet

Procedures:

1. Use material from background information to introduce the concept of periodontal disease. Cover cause, symptoms, and prevention. Lead the discussion to an emphasis on need for flossing to remove plaque around gum lines and between teeth.

2. Distribute the Self-Contract worksheet. Instruct students on worksheet procedures. Discuss results a week later.

Extensions:

1. Conduct a school survey for determining what percentage of students floss their teeth regularly, sometimes, or never. Categorize by grade and sex.

2. Plan a school newsletter that explains the reasons for flossing.

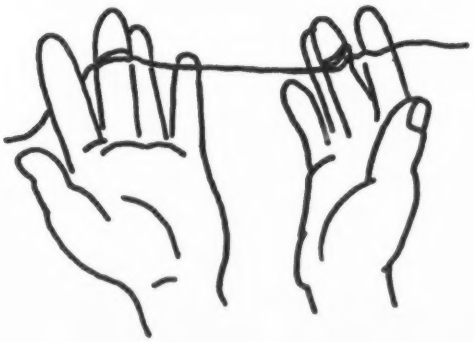
WORKSHEET: Floss Contract

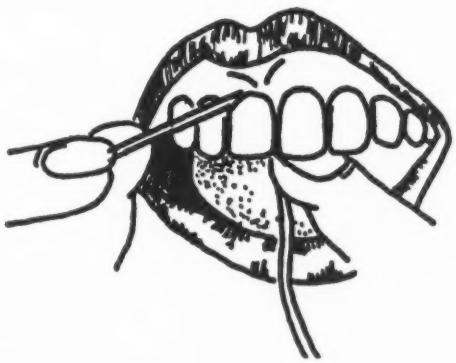
NAME _____

SELF-CONTRACT: Flossing My Teeth

You have been learning to make a plan for good dental health. The plan says: (1) brush your teeth after each meal, (2) floss your teeth once each day, (3) eat foods from the milk group each day, (4) eat fruit that helps you have healthy gums, (5) eat fewer snacks with sugar, (6) if you chew gum, use sugarless, (7) go to the dentist every six months.

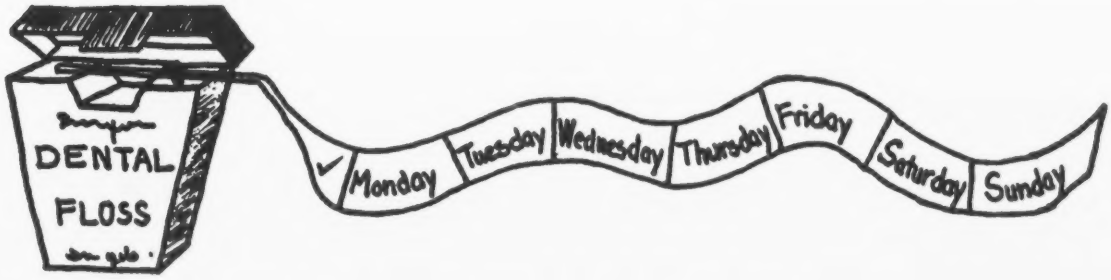
The pictures below show the correct way to floss. Help yourself form this health habit by doing the self-contract.





GOAL: I will floss my teeth each day.

PLAN: (1) I will plan a regular time when I will floss.
(2) I will put a check mark on the dental floss strip below for each day I floss my teeth.



EVALUATION: My gums seem to be more/less tender; bleed more/less; and my teeth are more/less clean since flossing this week.

RESULTS: I was/was not able to reach my goal.

In the future I will try to _____

Topic 3.4: Smokeless Tobacco

Program Objective 3.41: The student will infer the effect of smokeless tobacco on oral health.

Dipping snuff and chewing tobacco are habits that are gaining popularity all over the country, especially among male high school and college students. Junior high and elementary schools are also experiencing a rise in its usage.

A survey of 3,232 Utah students 10 to 18 years of age was conducted in Utah in September, 1984. When asked about use "in the last 24 hours," 3.6% indicated use. The data indicate that males are nine times more likely to use smokeless tobacco than females. Age 14 appears to be the time when regular use of smokeless tobacco begins. Of those students reporting use, there was no difference between urban and rural usage rates.

Smokeless tobacco seems to be affecting all ages. Children are exposed to advertisements which in a subtle way are telling them, "If you want to be a man, then you better use smokeless tobacco."

Walt Garrisson, the ex-Dallas Cowboy and rodeo star, tells young boys that smokeless tobacco ". . .is tobacco you can enjoy without lighting up and smoking." (Implying that smokeless tobacco is safe when compared to cigarette or pipe smoking.) It must be remembered, however, that there are no safe alternatives to smoking other than quitting.

In this advertisement, Garrisson goes on to describe the enjoyment one can get from smokeless tobacco. ". . .take a small pinch in your thumb and forefinger, and put it between your cheek and gum. Leave it there. No need to chew. The tobacco slowly releases its great flavor giving you real satisfaction."

"Going smokeless" takes some getting used to but that is part of the fun. "At first you could feel a slight irritation on the gum, and the tobacco may move around your mouth more than it should; and you might work up too much saliva. But learning is part of the fun and these things pass with practice. Two weeks should make you a 'pro'," he said.

Later in the ad he offers a free can of mild tobacco just to help someone get started. A coupon has the following exclusion in very small print, "Offer not available to minors." However, there is no way of determining whether it was an adult or minor who sent in the coupon.

A tobacco chewer is stereotyped as a macho man who is always having fun, is athletic, handsome, and surrounded by beautiful women. In a subtle way, the ad is teaching children that real men are users of smokeless tobacco while non-users are not. Students should be taught that sometimes it takes more courage to do what they want to do than to follow the crowd.

THE FOLLOWING FACTS ABOUT SMOKELESS TOBACCO SHOULD BE STRESSED:

1. The most serious health hazard associated with smokeless tobacco is oral cancer. Closely associated with this cancer is a condition known as leukoplakia. Leukoplakia is a term used to describe a leathery-appearing area in the mouth. It can be a "smooth, white patch or a thick, hardened, and wrinkled lesion." It is most frequently caused by repeatedly holding tobacco in one location in the mouth while sucking it. Leukoplakia is considered to be pre-cancerous. The experts aren't sure how long it will take for cancer to develop in such an area nor whether it ever will. Evidence suggests that 3% to 5% of the leukoplakia associated with smokeless tobacco becomes malignant.

2. Gums tend to recede from the teeth where tobacco is held in the mouth and as this happens the exposed roots become highly susceptible to tooth decay as well as sensitive to heat and cold.

The advanced periodontal, or gum disease, that occurs as a result of using smokeless tobacco is irreversible, thus placing the teeth in jeopardy. As teeth lose their gum and bone support, they have a tendency to drift from position, loosen and eventually may have to be removed.

3. All forms of smokeless tobacco contain high concentrations of chemicals which may cause cancer. These carcinogens are formed during the curing and processing of tobacco and have been shown to increase the risk of cancer of the oral cavity. The longer a person has chewed, the greater are his chances of developing some type of cancer of the mouth.

4. Besides causing damage to the gums, users of smokeless tobacco also have a higher incidence of tooth abrasions (wearing away of the tooth's biting surfaces.) This is caused by an unusually high amount of fine sand and grit which was not completely removed when the tobacco was processed.

5. Nicotine is found in all cured tobacco, which produces a dependency in those who use it in any form. Therefore, there is a strong possibility that tobacco chewers will develop a habit similar to smokers that can be difficult to break.

Nicotine is a drug that is readily absorbed through the lining of the mouth of a user of smokeless tobacco and it acts as a stimulant on the body's nervous system. Like other stimulants, its initial effect is stimulation or euphoria followed by a let down or psychological

depression. In order to get back up, people addicted to nicotine feel a need for more every 20 to 30 minutes while awake.

Nicotine also causes other changes in the normal body functions, such as: constricting the blood vessels, increasing the heart rate, and increasing the blood pressure.

6. Today's society places a lot of importance on white teeth and pleasant breath. Users of smokeless tobacco, on the other hand, frequently suffer from bad breath as well as discolored teeth.

There is no obvious way for a polite person to accommodate the need to spit tobacco juice every few minutes without offending others.

Topic 3.5: Malocclusions

Program Goal 3.Ø: To develop an understanding of tooth problems and how to prevent or alleviate these problems.

Malocclusion may be defined as irregularities in tooth or jaw position so that the upper and lower teeth do not come together in proper relationship (occlusion).

Malocclusion may be caused by hereditary factors, environmental factors or a combination of both. Hereditary factors include such things as tooth size, jaw size, jaw shape, jaw position, muscle abnormalities, missing teeth, deformed teeth, etc., with one or more of these factors being the primary cause of most malocclusion.

Environmental factors include such things as premature loss of primary teeth, loss of six year molars, tongue thrusting, lip sucking, reverse swallow pattern, thumb sucking, finger sucking, etc. These factors are occasionally the primary cause of malocclusion, but are more often modifying factors in malocclusion which is basically hereditary.

Premature loss of primary teeth is probably the major cause of non-hereditary malocclusion. This factor deserves special mention, since it is a direct result of neglect. The attitude that "baby teeth" do not need to be filled since these teeth will be lost anyway is a mistake that subjects a child to unnecessary infections and toothaches, and frequently results in a need for costly correction of a malocclusion which could have been prevented. Malocclusions caused by early loss of primary teeth occur because adjacent teeth are allowed to move towards the empty space. This not only displaces the adjacent teeth, but may inhibit permanent teeth from erupting in their proper Iposition.

Preventing decay and restoring primary teeth which do decay will prevent premature loss of these teeth, which in turn may prevent a malocclusion from developing. Fluoridation of water supplies or a daily systemic fluoride supplement, along with good oral hygiene habits, can prevent a high percentage of teeth from decaying. If a primary tooth is lost, a space maintainer can still prevent the development of a nonhereditary malocclusion or prevent the worsening of a hereditary malocclusion which may already be present. If a permanent tooth is lost, it should be replaced to prevent movement of adjacent teeth, thus preventing a malocclusion from developing.

DON'T LEAN ON ME

3.51 The student will recognize and describe malocclusions.

Grade Level: 2-4

Materials/Preparation:

None

Procedures:

1. Pick 10 students to represent teeth in the lower jaw. Have them form a semicircle showing the correct position of the primary teeth. Ask one student to step out and have the others demonstrate how the surrounding teeth could lean toward the space. Discuss how a dentist could treat such a problem with a space maintainer.

2. Replace the missing tooth and have another student role play a cracked or out of place tooth. Demonstrate how this might affect the other teeth.

3. Introduce the term malocclusion and discuss the role of an orthodontist.

Extensions:

1. Have an orthodontist visit the classroom and share information on malocclusions and then treatment.

2. Obtain plaster casts of crooked teeth from an orthodontist for classroom display.

Topic 3.6: Accidents

Program Goal 3.Ø: To develop an understanding of tooth problems and how to prevent or alleviate these problems.

A survey made in secondary schools showed 4.2 percent of the 4,251 children had fractured teeth. More boys have fractured teeth than girls. Protruding front teeth are a predisposing factor in injury to these teeth. This is a good reason for the early treatment of this deformity. Eighty percent of all fractured teeth occur in children, upper front teeth being most often involved.

Accidents occurring during play are the most frequent causes of injury to the teeth. Accidents at drinking fountains, injuries from thrown objects, and falls from stairs and bicycles all take a heavy toll on the anterior teeth. Home accidents and automobile accidents also have a share in these injuries. Certain careless activities of children often contribute to fractured teeth. Some of these activities are biting on objects such as bottle caps, thread, cracking nuts, chewing ice, chewing pencils, and opening bobby pins. "Horse play" such as shoving, pushing, tripping, jostling in hallways, playground, or buses, can also injure teeth.

What can teachers and parents do to cope with such situations? They should impress upon the child the danger of such careless actions. No running in buildings, no "horse play" at drinking fountains, the use of handrails on stairways and mouth guards in athletics are all methods of prevention.

Surveys show that more than half of all football injuries occur to the mouth. Properly fitted mouth protectors worn by players during practice and games will prevent nearly all injuries to the teeth and mouth. Mouth guards should be fitted by a dentist to insure maximum comfort and protection.

If an accident occurs, the teacher should be ready at once to do what is best for the child's welfare. Accidental injury to a tooth should receive prompt attention by a dentist even if only a corner of the tooth is damaged. It may be necessary for the dentist to temporarily cap or otherwise protect the fractured tooth to prevent further damage. Permanent repair may be made later.

Immediate first aid for a child with a broken tooth should be rendered before starting for the dentist's office. Try to clean dirt or debris from the injured area with warm water. Place cold compresses on the face next to the injured tooth to minimize swelling. Then, take the child to the dentist immediately.

If a tooth is completely knocked out, rinse it off but don't scrub it. If possible, replace the tooth in the tooth socket. Otherwise, place the tooth in a glass of milk or clean wet cloth and rush tooth and child to the dentist. The prognosis for a displaced tooth is improved if treatment is provided within ninety minutes.

In the case of a displaced primary tooth, reimplantation is not recommended due to the potential damage to developing permanent teeth. The dentist can, if indicated, place a space-maintainer until the permanent tooth erupts.

One other injury which may occur at school as a result of an accident is a bitten tongue or lip. The recommended treatment is to apply direct pressure to the bleeding area with a sterile or clean cloth. If swelling is present, apply cold compresses. If bleeding doesn't stop readily or the bite is severe, take the child to the hospital emergency room.

A TOOTH FOR A TOOTH

3.61 The student will identify ways of preventing accidental tooth injuries.

3.62 The student will describe actions to be taken in the event of a tooth injury.

Grade Level: K-3

Material/Preparation:

None

Procedures:

1. Begin the activity by asking students if they have ever broken or bumped a tooth. How did it happen? How did it feel?

2. Make a list of ways accidents to teeth can happen. Discuss each. The list may include:

   Tricycle and bicycle accidents
   Thrown ball bats
   Hit in mouth with swing seat
   Teeter-totter accidents
   Tripping on objects on the floor
   Car accidents (no seat belt on)
   Hard object in mouth
   Chewing ice or hard candy

3. Develop a class list of dental safety rules. Have them typed up and distributed to the entire school.

4. Discuss the three types of dental injuries covered in Topic 3.6: Accidents.

5. Have students role play the situations listed below.

Knocked Out Permanent Tooth

Rinse the tooth off, but don't scrub it. Place the tooth back in the tooth socket, or in a glass of milk, or a clean wet cloth. Go to the dentist immediately.

Bitten Tongue or Lip

With a clean cloth, apply pressure to the bleeding area. Apply cold if swelling occurs. If bleeding does not stop, go to a hospital emergency room.

Broken Tooth

Clean dirt from area with warm water. Place cold cloth on face next to injured tooth to control swelling. Go to the dentist.

Extensions:

1. Have students draw pictures that illustrate how teeth can be injured.

2. Invite a former or present football player or coach into the classroom to tell how tooth injuries are prevented in sports.

TOOTH INJURIES

3.61 The student will identify ways of preventing accidental tooth injuries.

Grade Level: 2-5

Materials/Preparation:

3 worksheets

Procedures:

1. Read the following story to the class. Ask them to listen to discover how Timmy took care of his teeth.

TIMMY THE TWO-TOOTHED MUSICAL MOUSE

Hello! My name is Zack and I have a story to tell. It's about my best friend, "Timmy The Two-Toothed Musical Mouse".

I wish you could meet Timmy. If you could meet him you would like him. He is a gray mouse, with a long tail, short whiskers, big brown eyes, small ears, a little nose and no teeth, except for two front teeth that rest on his lower lip.

Timmy got his nickname "The Two-Toothed Musical Mouse" because his two front teeth tinkle. "That's impossible," you say and I would agree except I have heard them. Whenever he opens his mouth, air rushes in, hits his tonsils, bounces off and hits the back of his two teeth. This causes the tinkle.

The tinkle will always be there. There is no way to stop it, unless he can get someone to make him a set of false teeth. Unfortunately, there is no such thing as false teeth for mice.

Our music teacher wanted Timmy to use his teeth as a musical instrument and play in the school band. I can picture him introducing Timmy at a special concert. "Ladies and gentlemen, I'd like to introduce Timmy and his musical teeth. He will play his favorite song, 'Without My Teeth I Feel Like Crying'." Timmy never got a chance to play that tune, because he couldn't read music. So he quit the band.

Timmy's biggest problem with musical teeth is that people can't understand him when he talks because it sounds like his mouth is always full of crackers. People have to guess at what he is trying to say, and they usually guess wrong. For example, a couple of weeks ago he went into a restaurant and ordered a hamburger, french fries, and a glass of milk. The waitress misunderstood and brought him a glass of milk mixed with a rootbeer, a raw egg, and an Alka-Seltzer.

Last week he took his suit to the dry cleaners and told them he wanted it cleaned and pressed. When he picked it up, the sleeves had been cut off and the buttonholes sewed up. Yesterday, he went to the doctor to have a sore whisker trimmed. Instead the doctor put a cast on his tail. These things wouldn't have happened if Timmy had all his teeth.

Most people think Timmy lost his teeth because he didn't take care of them. But this just isn't true. At one time he had the healthiest and prettiest teeth in the entire school. He was proud of them, and he treated them like they were his best friends. In fact, he took such good care of them that he didn't have a single cavity. He always tried to eat the right food. He drank his milk everyday, and along with it he liked to eat a grilled cheese sandwich. He thought he was getting a treat if he could eat a big juicy, crispy, red apple. He always ate his vegetables without complaining, and he swallowed his fluoride tablet every day.

Every morning he would eat a good breakfast. Afterwards he would hurry to the bathroom to brush and floss his teeth. He knew this was necessary if he wanted to prevent decay.

Timmy went to the dentist regularly to have his teeth cleaned, checked, and treated with fluoride. He did everything he was supposed to do to keep his teeth healthy.

Timmy enjoyed learning about his teeth. Whenever his teacher talked about dental health, he would listen very carefully. "If you want to keep your teeth healthy, then you must eat good food, cut down on your sugary snacks, brush and floss daily, use fluoride each day, and visit your dentist," she said. Timmy did all of those things, but he still has only two teeth.

I'll bet you a cheeseball that you are wondering why he lost his teeth. Aren't you? He would probably still have them, except he had an accident while playing football.

He played tight end on his school team, and he loved it. He practiced hard, and he played hard. He was good. He knew it and so did the entire team. Timmy loved the thrill of catching a pass. He wanted the quarterback to throw to him on every play.

The accident happened in the third quarter of the championship game. In the huddle the quarterback called a pass play to the tight end. Timmy was excited. "Hurry and snap the ball," he thought to himself. "Maybe I can make a touchdown with this one."

The ball was snapped; the quarterback faded back; Timmy ran towards the end zone. He was open; the quarterback spotted him and threw the ball. It was slightly overthrown, so Timmy had to jump for it, but so did two defensive backs. All three were fighting for the ball when an elbow hit Timmy in the mouth. He fell to the ground, landing on the other player's shoe. When he stood up he saw his teeth lying on the ground. All except two were knocked out.

He picked up as many as he could find and ran to his dentist, who tried to save them. Unfortunately, they were too badly damaged.

Timmy felt terrible about his teeth. "I can't believe I lost my teeth this way," he kept telling himself. "I might have lost them if I didn't take care of them, but not by playing football. What a terrible waste!"

Timmy could have protected his teeth if he had used the proper safety equipment. But he wasn't wearing a helmet, and he refused to use the mouthguard. Now he knows that safety rules are made to protect us and to prevent injury.

Before his accident, Timmy didn't realize how easily teeth could be damaged. After his accident, he started counting the number of friends who didn't follow safety rules. Some of them had also damaged their teeth as a result of it.

One of his friends was hit in the mouth with a snowball and lost a tooth. A boy down the street broke two teeth because he was riding his bike with no hands. A classmate opened a pop bottle with his teeth and snapped a tooth in half. A girl in another class had three knocked out because someone pushed her while she was getting a drink.

If Timmy could talk, I think he would tell you, "If you want to keep your teeth you must brush and floss, visit the dentist, eat right, cut down on your sugary snacks, use fluoride and be careful when you play. Remember, an accident can ruin your teeth, so obey all the safety rules."

Someday someone might make a set of false teeth for Timmy but until then he will be known as "Timmy The Two-Toothed Musical Mouse."

2. Discuss the story.

3. Distribute and do the Secret Message worksheet. What was Timmy's secret message? **Answer:** (If you want to keep your teeth you need to brush and floss, visit the dentist, eat right, use fluoride, and be careful when you play. An accident can ruin your teeth, so obey all safety rules.

4. Do the crossword puzzle worksheet. **Answers:** (Down: 1. vegetables, 2. bicycle, 3. dentist, 4. apple, 5. teeth, 6. talk, 7. floss, 8. brush. Across: 1. accident, 2. push, 3. breakfast, 4. snowball, 5. mouse, 6. cheese, 7. fluoride, 8. safety, 9. milk.

5. Discuss and do the How to Prevent Broken Teeth worksheet. Send the completed worksheet home with students.

Extensions:

1. Discuss accidents students have had with their teeth.

WORKSHEET: Tooth Injuries

NAME_____

Instructions: Decode Timmy's Secret Message by using the secret code below.

TIMMY'S SECRET MESSAGE

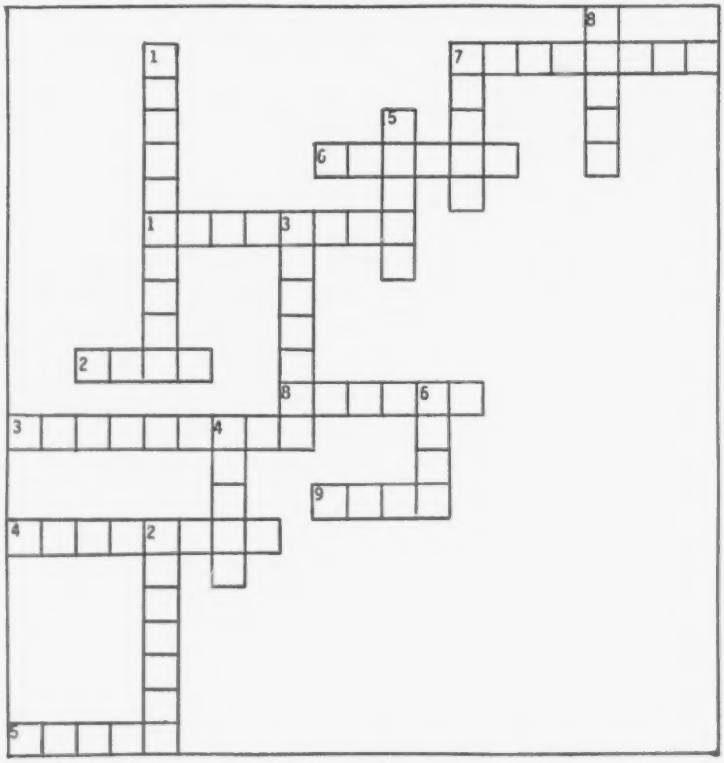
"18 21 2 12 6 4 26 13 7 7 12 16 22 22 11 2 12 6 9 7 22 22 7 19 2 12 6 13 22 22 23 7 12 25 9 6 8 19 26 13 23 21 15 12 8 8, 5 18 8 18 7 7 19 22 23 22 13 7 18 8 7, 22 26 7 9 18 20 19 7, 6 8 22 21 15 6 12 9 18 23 22, 26 13 23 25 22 24 26 9 22 21 6 15 4 19 22 13 2 12 6 11 15 26 2. 26 13 26 24 24 18 23 22 13 7 24 26 13 9 6 18 13 2 12 6 9 7 22 22 7 19 8 12 12 25 22 2 26 15 15 7 19 22 8 26 21 22 7 2 9 6 15 22 8."

SECRET CODE

a - 26	g - 20	n - 13	u - 6
b - 25	h - 19	o - 12	v - 5
c - 24	i - 18	p - 11	w - 4
d - 23	j - 17	q - 10	x - 3
e - 22	k - 16	r - 9	y - 2
f - 21	l - 15	s - 8	z - 1
	m - 14	t - 7	

WORKSHEET: Tooth Injuries NAME_____

TIMMY'S CROSSWORD PUZZLE



DOWN

1. Timmy's Mom gave him carrots, lettuce, and other_____to eat and he ate them.
2. One of Timmy's friends fell off his_____and broke two teeth.
3. Timmy went to the_____ regularly to have his teeth cleaned, checked, and polished with fluoride.
4. Timmy thought he was getting a treat if he could eat a big, juicy, crispy, red_____.
5. Timmy lost his_____in an accident.
6. Because Timmy only had two teeth, it was hard for him to _____and be understood.
7. Before Timmy's accident, he would brush and_____ every day.
8. Timmy's teacher told his class to_____and floss their teeth if they wanted to keep them.

ACROSS

1. Timmy lost his teeth in an _____while playing football.
2. A girl in Timmy's school was getting a drink from the water fountain and someone gave her a little_____and it knocked out three teeth.
3. Every morning he would eat a good_____.
4. One of Timmy's friends lost a tooth after being hit in the mouth with a_____.
5. Timmy's nickname is "The Two-Toothed Musical_____.
6. Timmy drank his milk every day and along with it, he liked to eat grilled_____sandwiches.
7. The dentist put_____on Timmy's teeth.
8. Timmy said, "Remember an accident can ruin your teeth so obey all the_____rules.
9. Every day Timmy drank a big glass of_____.

WORKSHEET: Tooth Injuries

NAME_____

HOW TO PREVENT BROKEN TEETH

Instructions: Pick one of the ways to prevent broken teeth and draw a picture about it at the bottom of the page.

Football: Wear properly fitted mouthguard and helmet.	Bicycling: Be careful in rainy weather. Wet roads and wet leaves are especially dangerous.
Baseball: Wear catcher's mask while receiving pitched balls.	Ice Skating: Do not push or trip other skaters. Wear a mouthguard when playing hockey.
Basketball: Wear a mouthguard especially in rough games.	Roller Skating: Do not go too fast! Keep your skates under control. Never "hitch" rides.
Boxing: Always wear a mouthguard.	Drinking Water: Do not hit, push, or throw at a person while he drinks from a container or fountain.
Running Games: Never trip or upset another player during play. Be careful of dangerous objects.	Swinging: Remain seated. Do not jump from or walk under a moving swing.
Riding in Cars: Be aware of sudden stops. Use a seat belt.	Sledding: Watch out for trees and other things in your path.
Swimming and Diving: Use the ladder to climb out of a pool. Do not run or push.	Playground: Do not push, shove or trip playmates.
Tree Climbing: Never climb a wet tree. Be sure of your footing at all times.	
Hill Climbing: Go with an experienced climber. Test firmness of rocks and footing.	

Topic 4.1: Dentistry Yesterday, Today, and in the Future

Program Goal 4.0: To put today's dentistry into a historical perspective.

Dentistry is a progressive profession and one of its most significant and important breakthroughs is in its ability to prevent dental disease. Today's children, for the first time in history, can go through life without ever having a cavity or feeling the pain of a toothache--if they learn the SECRET OF PREVENTION. This secret of prevention lies in the use of fluoride, as discussed in Topic 3.2.

Fluoride is most effective on the smooth surfaces that surround our teeth. Consequently, it offers little protection to the chewing surfaces of our molars. Modern research has developed something that will protect these pits and fissures of the back teeth, where 50% of all tooth decay occurs. It is called a pit and fissure sealant.

The pits and fissures of the teeth refer to the dimples and grooves on the biting surfaces of the molars. This part of the tooth is more susceptible to decay because food and bacteria can be trapped there. Brushing and flossing are ineffective in preventing decay in this area because the grooves and pits are microscopic in size and the diameter of a single brush bristle is even too large to fit down into them in order to clean out the trapped food and bacteria.

A sealant is a plastic resin which is placed on the chewing surfaces of the back teeth. Its purpose is to prevent the decay-causing bacteria from creating cavities by effectively eliminating their hiding places.

Sealants are extremely effective in preventing pit and fissure decay and by combining them with fluoride, nearly all tooth decay can be prevented. They are applied by a dentist or dental hygienist when the first permanent molars erupt at an age of about 6-7 and then again at age 11-12 when the rest of the permanent molars appear.

Dentistry of the future will be different from today's dentistry as modern research rapidly changes the profession. Much more emphasis will be placed on prevention, thus sharply reducing the need for dentists to practice dentistry as we know it today.

The goals of the intensive dental research programs being conducted in this country are to eradicate dental decay, much like scientists eliminated smallpox. The efforts of hundreds of researchers are paying off as is evidenced by the fact that today one-third of America's school children are completely free from cavities. The prevalence of dental decay in the remaining two-thirds has been cut in half.

Some of the more exciting areas of dental research that may impact children in the future include:

1. **VACCINE AGAINST DENTAL DECAY:**

Definite progress is being made that will allow infants to receive an oral vaccine that combats cariogenic (decay-causing) bacteria. Hopefully, this will help babies to develop an immunity against dental decay by the time their teeth begin erupting. This is a new area of research but one which has much potential.

2. **FLUORIDE RELEASING SEALANTS:**

Researchers are working on a sealant that gradually releases fluoride. This will add extra fluoride protection. Those children at high risk for developing dental caries will especially benefit from this development.

3. **PERIODONTAL (GUM) DISEASE RESEARCH:**

Periodontal disease is the leading cause of tooth loss and it actually begins at a relatively young age. Research is studying possible methods of preventing bacteria in plaque from adhering to the teeth. Also work is being done to develop antimicrobials and antiplaque agents that will eliminate the pathogens of periodontal disease.

4. **DENTAL COMPOSITES:**

New materials to replace amalgam (silver) fillings have recently been developed. Some of their advantages are that they require less drilling and they can be matched to the natural tooth color so they have an aesthetic value.

5. **SLOW RELEASE DEVICE THAT INCREASES FLUORIDE IN PLAQUE AND SALIVA:**

A bean-shaped object made from a plastic similar to the plastic used in soft contact lenses has been attached to molar teeth. This object contains fluoride and slowly releases it into saliva providing a topical as well as a systemic protection similar to what would be received if one were drinking fluoridated water. This approach to daily fluoride would require less effort and ensure a higher compliance as parents would not have to remember to give their child a daily tablet.

6. **DIAGNOSING EARLY TOOTH DECAY:**

Research is being done to detect tooth decay before any discernable sign is visible. If such a diagnostic procedure is developed, dentists will be able to treat the tooth before any permanent damage to it occurs.

7. OTHER AREAS OF DENTAL RESEARCH:

Genetic researchers have isolated a gene that is essential to the formation of tooth enamel. Therefore, someday teeth may be restored by using this knowledge to help the tooth heal itself.

A person's risk for cavities or other dental diseases may someday be diagnosed by a simple examination of the patient's saliva.

It is an exciting time for dentistry. Advancements are being made which allow us to keep our teeth healthy. There is no reason for our children to suffer the loss of their teeth. However, it has been said, "There is nothing the dentist can do to undo what the individual will not do." In other words, the greater responsibility for keeping our teeth and gums healthy belongs to each of us. Our dentist can warn us, our teacher can inform us, our parents can encourage us, but we must put forth the effort to do what must be done to keep our teeth healthy.

Let's convince our students that they are fortunate to be living today when dentistry has the capability to repair, but more importantly it can prevent dental disease. This means that much of the pain associated with dentistry of the past can be eliminated.

DENTAL HISTORY

4.11 The student will develop an appreciation for modern dental practices and procedures.

Grade Level: 2-4

Materials/Preparation:

None

Procedures:

Read and discuss the following information on dental history using the discussion questions that follow. Try to develop appreciation for the capabilities of modern dentistry.

The History of Dentistry

No one knows who the first dentist was nor when he/she lived. It is conceivable that the first dentist was a friend of someone who was troubled by a toothache and helped alleviate the pain by using a primitive chisel to knock out the aching tooth.

For thousands of years man has blamed toothaches on evil spirits or offended diety, so the first dentist may have been a medicine man who practiced magic or the tribal religious leader offering a sacrifice to an offended god.

Eventually, people began searching for something other than magic to relieve a toothache, so they started experimenting with various materials and substances that they hoped would bring them relief. They tried herbs, animal tissue, human excretions, and offensive smells, usually aimed at driving evil spirits out.

They had all sorts of reasons, based on superstitions and ignorance, for doing what they did. Bad smelling mixtures were used as a means of offending the evil spirits and thereby driving them out of the aching tooth. A useless remedy would be tried, and if by some chance the pain disappeared, credibility was immediately gained. People didn't consider the possibility that it could have been a coincidence, a freak happening that was unrelated to the useless remedy.

Dental progress and knowledge have evolved slowly, taking thousands of years to reach the point we are at today. The evolution of dentistry is fascinating. For example, an early Egyptian dentist might advise his patient to treat a toothache by splitting a mouse in half and rubbing it over the aching tooth.

A Greek dentist living in the fifth century B. C. would use a mouse in a prescription for curing bad breath.

A dentist living during the Middle Ages would try curing a toothache by having his patient inhale smoke, because he was convinced that worms got in the tooth and caused the pain. Fumigating the teeth with smoke would kill the worms and relieve the pain.

The early Chinese used arsenic to cure a toothache. It worked to a degree, because it killed the pulp of the tooth, but the surrounding tissue would usually be damaged, which all too often led to an abscessed tooth. The dentists in this country, as late as 1850, also used arsenic to kill the pulp before they extracted the tooth.

Aristotle was one of the earliest, if not the first, to associate sweets with tooth decay. "Figs and soft sweets," he said, "produce damage to the teeth, because small particles adhere between the teeth where they very easily become the cause of putrefactive processes."

The Etruscans, who lived in Central Italy from 1000 B.C. to 400 B.C., were the most advanced of all the ancients in the art of mechanical dentistry. That is, they were very advanced in making crowns, bridges and false teeth.

Roman aristocrats practiced restorative dentistry for esthetic rather than health reasons. They were interested in having false teeth to improve their appearance rather than as an aid to digestion.

Dentistry during the Middle Ages retrogressed from where it had been during the Roman and Etruscan times. Barber-surgeons became recognized as persons with the skill to shave a man's face, cut his hair, extract his teeth, and perform minor surgery.

Dentistry in this country has had its own unique but interesting history. The Plymouth Colony brought the first dentist (barber-surgeon) to America about 20 years after the first pilgrims arrived. His name was W. Dinley, and shortly after his arrival he perished in a snowstorm as he was traveling to Roxbury (now a part of Boston) to pull a tooth for a patient.

In April 1768, Dr. John Baker, who was one of the first competent dentists to practice in this country, left Boston and went to New York. His advertisement in the New York Journal claimed he could cure scurvy, fill hollow teeth with lead or gold, and make false teeth that looked as good as a person's natural teeth.

While it was true that the dentists of that time were using lead and gold foil to fill teeth, the procedures were painful and far from satisfactory. His claims of making "artificial teeth" were greatly exaggerated and, by today's standards, highly misleading. False teeth at that time were made from ivory, and they neither fit well nor looked as nice as natural teeth.

One of our most famous revolutionary war heroes, Paul Revere, was a dentist. In one of his advertisements that he placed in the Boston Gazette, he claimed that he could also make false teeth that looked as good as natural teeth, and they wouldn't hinder a person's speech.

The most famous false teeth in American history were those worn by our first president, George Washington. He had several sets of false teeth, but none were made from wood, rather they were all made from ivory.

The world's first dental school opened its doors in 1840, in Baltimore, Maryland. Up until then dentists got their training through an apprenticeship program, supplemented with whatever dental books were available. They had no background or knowledge of anatomy, pathology, or other related sciences.

It took many years for the idea of a dental school to take hold. The changes in dental education were slow and gradual, but eventually the profession realized that a higher quality of training could be attained at a dental college rather than through an apprenticeship program.

Today all dentists must graduate from a dental college, then pass a state licensing examination before they can practice dentistry. This is one of the reasons that history's most highly trained and capable dentists are practicing today. They are doing things that the dentist of the past could only dream about. Today's dentists are doing a much better job of repairing (restoring) teeth. They can treat and cure gum disease, straighten crooked teeth, and aid in the prevention of dental disease.

Discussion questions:

A. Describe what it would be like to go to a dentist who lived 150 years ago.

B. Why is education so important to today's dentists?

C. Are we doing things today that people living 50-100 years from now will find strange? Why?

D. For the first time in history we can prevent dental disease. Explain how. (**Answer:** Brush, floss, and use fluoride daily, eat sugary snacks only with meals, and visit the dentist regularly for an exam, fluoride treatment and sealants.)

E. Are you aware that the best dentists that ever lived are alive today? Explain why.

Extensions:

1. Share the following dental health trivia with students.

Dental Health Historical Trivia

The facts listed below are actual superstitions, beliefs, and practices of people in various civilizations and cultures throughout history. They are listed here to provide the teacher with some interesting material that can be used to stimulate a discussion on dental health. An attempt has been made to list them according to different subjects.

Teeth: A Sign of Beauty and Wealth

Teeth have been considered important as well as a sign of beauty and wealth for thousands of years. Throughout the world, there have been and still are many interesting dental customs. Some of the more interesting ones include the following:

1. Dyeing the teeth black is considered a great embellishment among many races of Asia and Oceania.
2. In Sumatra and the neighboring islands, many women file their teeth down to the gums; others file them into points, or partially remove the enamel so as to render it easier to apply the black dye, this being held to be the height of elegance. Men of high rank dye their upper teeth black and cover their lower ones with fine gold plates, which in full light produces what they consider a fine contrast.
3. Some of the people of Eastern India plane their teeth down to an even level; and from the habit of chewing areca nuts mixed with chalk and other substances, their lips and teeth are dyed red.
4. Natives of Abyssinia would "often file their incisors into points to resemble the form of canines; this is in order to give themselves an air of greater ferocity."
5. The natives of the Sandwich Islands sacrifice their front teeth to conciliate the favor of their god, Eatoa.

False Teeth

1. Two hundred years ago false teeth were made from bone, elephant ivory, or hippopotamus ivory.
2. Teeth from oxen, cats, hogs, calves, and elk were often used in the false teeth sets. These teeth were filed down to the proper width of human teeth and they were lighter in color than natural teeth. Corrosive agents that were in the saliva weakened the teeth and they would break during mastication.
3. Towards the middle part of the 1700's and early 1800's, the dentists were experimenting with human tooth transplants. Poor people would have their teeth pulled and sell them to the rich.

Remedies for a Toothache

1. A nail driven into an oak tree will cure the pain of a toothache.

2. Take the forelegs of a mole and one of the hindlegs, and put them into a bag. Wear it around your neck, and you will never have a toothache.
3. Bite from the ground the first fern that appears in the spring, and you will cure the toothache, and never have it again during the year.
4. If you clothe your right leg first (i.e., put your right stocking on first, and your right leg into your trousers first), you will never have the toothache.
5. Take a few clippings of the sufferer's hair and a few parings of his nails, make them into a small parcel, and nail the parcel to the tree.
6. Stand under the open sky on the ground, catch a frog, spit into its mouth, request it to go away, carrying the toothache with it, and let it go.
7. A German method was to go in silence before sunrise to a tree, especially a willow tree, make a slit in the bark on the north side of the trunk, cut out a splinter from the place, poke the splinter into the aching tooth, then put the splinter back into the place it was taken from, fold the bark over it, and tie it with string, so that the splinter might grow back into the tree. As it grew, your pain would vanish.
8. If a canine tooth of a lion was suspended from a child's neck before the milk teeth (baby teeth) fell out and during the eruption of the second teeth, it would secure the child's immunity from dental pains.
9. Touch the aching tooth with the tooth of a dead person, and afterwards grease it with horse's marrow.
10. Ancients thought tooth decay and toothache were caused by a worm. To help a person get rid of these problems, fumigation was practiced.
11. Roast a bit of garlic and crush it between the teeth, mix with chopped horseradish seed, make into a paste with human milk, form pills and introduce one into the nostril on the opposite side to where the pain is felt.
12. Gums that were described as being "pale, or violet red, hard and lumpy, sometimes bleeding; (and where) the toothache is continuous," were treated by using the urine of a child as a mouthwash. This remedy played an important role in mouth hygiene even as late as 1728.

Methods of Extracting Teeth

1. Let a green frog which jumps from tree to tree be seized and let his fat be taken, and any tooth smeared with it falls out.
2. In Arabia it was the belief of some that a tooth could be made to fall out by applying the root, red arsenic paste or an oil in which frogs had been boiled.

Miscellaneous

1. Biblical Babylon had a state board that controlled and licensed dentists, fixed a scale of fees based on the rank of their patients, and set penalties for malpractice. For a major mistake--like pulling a few wrong teeth--the board could order the removal of a dentist's right hand.
2. Among some ancient people, teeth were so highly prized that knocking them out was common punishment for law-breakers. A man could commit a one, two, or three tooth crime, and presumably go to trial with his lawyer and his dentist in attendance.
3. The toothbrush was perfected by the Chinese in 1498. One end of a pencil-thin twig was split to separate the fibers into a sort of primitive toothbrush. The other end served as an earscoop.

GEORGE'S TEETH

4.11 The student will develop an appreciation for modern dental practices and procedures.

Grade Level: 2-6

Materials/Preparation:

None

Procedures:

1. Read or share the following, defining the vocabulary as you go:

At the time of George Washington's inauguration all of his natural teeth, except for one lower molar, had been lost. His dentures (which were ivory, not wood) were made to fit over this lone molar, which also acted as an anchor. Sometime later during his presidency this last tooth was also lost.

During his lifetime, George Washington suffered many toothaches, and when the pain became unbearable his dentist would cure it by pulling the tooth. In those days the dentists didn't have the skills or knowledge to repair teeth nor could they deaden the pain when they pulled them.

In the late 1700's and early 1800's dentists started experimenting with tooth transplants. A dentist would approach a poor person (who had a nice set of teeth) and offer to buy a tooth. He would pull it and then try transplanting it in the mouth of a wealthy client. Unfortunately, it didn't last for long, but it did create unnecessary dental problems for the person who sold the tooth.

That our dentists are more capable of meeting our dental needs is obvious on closer examination of their skills. For example, today teeth can be straightened, cavities can be filled, gum disease can be prevented and cured, tooth decay can be prevented, painful teeth can be repaired without much pain and other dental procedures can be done as they are needed.

A hundred years ago the dentists didn't have this kind of skill, and although they were sincere in their efforts their methods usually meant losing a tooth. Today more than half of the elderly people in the United States (age 65 and over) have lost all of their teeth, but this proportion is steadily declining. Now our dentists are involved in saving teeth, and if we do our part our teeth will last us a lifetime.

2. Discussion Questions:

   A. If George Washington lived today do you think he would still need false teeth, or do you think he could keep his teeth?

   B. If you could choose your dentist, would you choose the dentist that worked on George Washington's teeth or would you keep the one you are now going to? Why?

   C. What are some of the things you can do to help the dentist take care of your teeth?

Extensions:

1. Visit a grandparent and have them tell stories about dental problems they had as children. Share the stories in class.

WHY TOOTHPASTE?

4.11 The student will develop an appreciation for modern dental practices and procedures.

Grade Level: 3-6

Materials/Preparation:

Old magazines

Procedures:

1. Review reasons for brushing teeth. Ask students what kind of toothpaste or powder they use and why. Lead to the conclusion that toothpaste with fluoride is essential for the prevention of tooth decay.

2. Assign students to collect magazine and newspaper ads for toothpastes and toothpowders. Look for half-truths and false statements in the ads.

3. Have a team of student investigators visit a supermarket and list all brands, types, and costs of toothpaste and toothpowder. Note which have the seal of approval of the American Dental Association. Discuss the findings with the class.

Extensions:

1. Plan a program to share the results of the above activities with other classrooms.

2. Devise a mock TV show for lower grades about fake advertising of dental products.

Topic 5.1: Dental Professionals

Program Goal 5.0: To develop an understanding of the importance of dental professionals.

DENTISTS:

Dentists are specialists trained in the science of prevention, diagnosis and treatment of diseases of the oral cavity. Dentists receive usually four, but at least two years, of undergraduate college and four years at an accredited dental school. Besides holding a Doctor of Dental Surgery (DDS) or Doctor of Dental Medicine (DMD) degree, dentists must be licensed in the state where they practice.

Dentists may be general practitioners or receive additional training in a specialty field. General practitioners must be proficient in many areas of dentistry, whereas the specialists devote their time and skills to specific dental problems. The following are the eight recognized dental specialists:

Endodontist: Specializes in diagnosis and treatment of diseases of the dental pulp, the center of the tooth which is made up of nerves, blood vessels, and connective tissue. Fills root canals.

Oral and Maxillofacial Surgeon: Specializes in diagnosis of injuries, diseases and malformations of the oral cavity. Performs extraction of impacted wisdom teeth and other complex surgical procedures.

Oral Pathologist: Specializes in the study of the nature of diseases of the mouth through laboratory or clinical diagnosis. Helps other dentists to diagnose difficult cases.

Orthodontist: Specializes in the treatment, and where possible, prevention of abnormal alignment of teeth and jaws. Puts on braces.

Pedodontist: Specializes in preventing and treating mouth conditions which arise during childhood and early adolescence. A children's dentist.

Periodontist: Specializes in prevention and treatment of diseases of the supporting tissues surrounding the teeth. Treats gum disease.

Prosthodontist: Specializes in replacing missing natural teeth and related structures with fixed or removable substitutes, such as full or partial dentures.

Public Health Dentist: Specializes in the control and prevention of dental disease and the promotion of oral health through organized community efforts. Usually, these dentists are employed by a government agency.

While most dentists in the United States work in private practices, dentists may also practice in schools, hospitals, institutions, state and local health agencies, the armed forces, or in other federal government agencies.

Dentistry is a constantly changing field. Dental research is developing better materials, equipment and techniques for treating existing problems, as well as making remarkable advances toward preventing dental diseases. Individuals who take advantage of the services and knowledge offered by their dentist by establishing regular dental visits and a lifetime of good daily dental habits, will achieve their highest potential of dental health.

Auxiliary members of the health team in the dental office are the dental hygienist, the dental assistant and the dental laboratory technician.

THE DENTAL HYGIENIST:

The dental hygienist is a professional oral health educator and clinical operator who uses scientific methods for the control and prevention of oral diseases to aid individuals and groups in attaining and maintaining optimum oral health.

To practice, a dental hygienist must graduate from an accredited four-year college program offering a bachelor of science degree or an accredited two-year program leading to a dental hygiene certification. They must also be licensed by the state where they practice.

A dental hygienist may provide the following services: oral prophylaxis, which is the removal of calculus, plaque and stain from tooth surfaces above and below the gum line; teaching proper oral health home care; application of topical fluorides and pit and fissure sealants; nutritional counseling; dental x-ray surveys; oral cancer examinations; local anesthetic and nitrous oxide administration and minor gum treatment.

Besides working in a private dental practice, a dental hygienist may also work in hospitals, nursing homes, state or local health departments, armed services or school programs.

DENTAL ASSISTANT:

A dental assistant is one of the most important members of the dental health team. A dental assistant may be trained in the dental office or attend a one to two-year special school. A well-trained dental assistant is always one step ahead of the dentist allowing the dentist's work to flow smoothly. Dental assistants perform many functions, including assisting the dentist at the dental chair by preparing instruments and materials, taking x-ray pictures, and acting as business managers by keeping records, ordering supplies, and making appointments.

DENTAL LABORATORY TECHNICIAN:

A dental laboratory technician constructs and repairs such dental restorations as dentures, crowns, bridges and inlays. This service is performed under the direction and authorization of a licensed dentist. Dental laboratory technicians may receive one to two years of special training or receive on the job training. A good dental laboratory technician is considered a skilled craftsman and is an invaluable asset to the dental team.

VISIT TO THE DENTIST—ROLE PLAY

5.11 The student will conclude that a dentist can prevent many future problems.

Grade Level: 2-6

Materials/Preparation:

When the children act out the various role play situations, care should be taken to ensure that they portray the visit to the dentist as a positive experience. They should be helped to understand that they don't need to be afraid of the dentist and that he/she is their friend who is only interested in helping them.

Procedures:

1. By having the students role play a trip to the dentist, they gain a better understanding of what a dentist does and how he/she helps their teeth. These role play situations can also be used to help the children realize that the dentist is their friend and they should not be afraid of visiting him. Introduce the activity by assigning the following situations to groups of students. Give them preparation time. Then share and discuss each situation.

   A. Have a child go to the dentist for a dental exam. The dentist takes an X-ray and does a visual exam. He/she doesn't find any cavities, so cleans the child's teeth and gives him a fluoride treatment.

   B. Have a second child visit the dentist for an exam. The dentist does everything done in the above example, but also finds a cavity and repairs it.

   C. Another child enters the dental office with a toothache. The dentist repairs it and the child leaves happy.

   D. A boy knocked out his front tooth in a football accident. He picked the tooth up, rinsed it off, placed it in a glass of milk, and took it to the dentist who was able to put it back in the boy's mouth and save the tooth.

   E. A child needing braces went to the dentist to have them put on. He has to go back and have them adjusted.

   F. Have a student act as a dentist by teaching the class how to brush and floss properly.

2. Distribute the worksheet and discuss the function of the various tools used by a dentist.

Extensions:

1. Write experience charts about the above situations.

2. Provide information on careers related to dentistry.

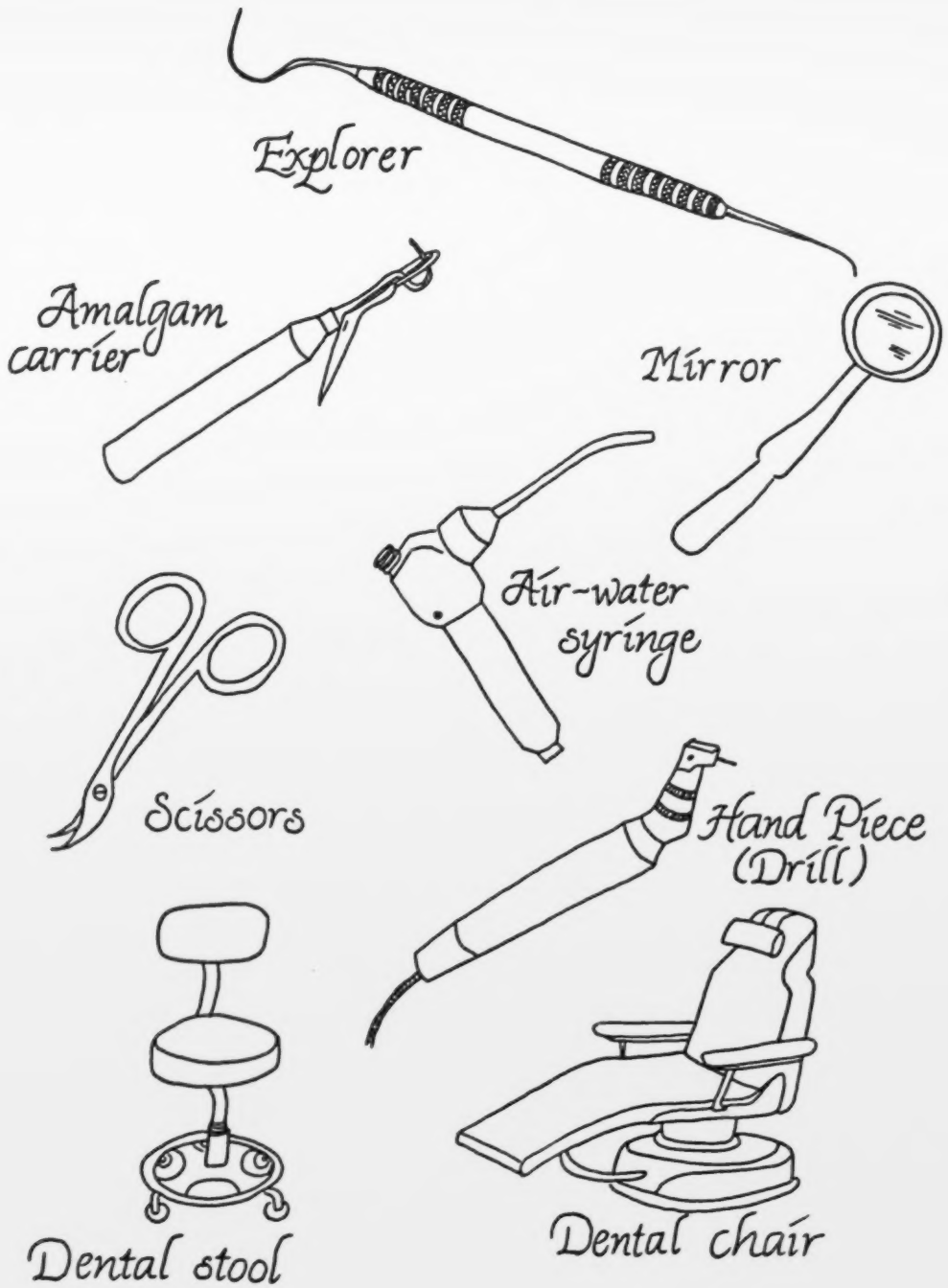
3. Set up a bulletin board display related to dentists and dentist's helpers. Include toothbrush pictures, ads, pretty smiles, etc.

4. Have a "Visit to the Dentist" poster contest.

WORKSHEET: Visit to the Dentist

NAME_____

TOOLS OF THE DENTIST



FALSE TEETH—FALSE ECONOMY

5.11 The student will conclude that a dentist can help prevent many future dental problems.

Grade Level: 3-6

Materials/Preparation:

2 worksheets

Procedures:

1. Introduce the activity by discussing experiences students have had with toothaches and visits to the dentist. Ask students if they know how much each cavity cost. Discuss what would have happened if the decay had not been stopped. Talk about the disadvantages of false teeth.

2. Distribute the "Dental Health/Math Exercise" worksheet. Have the students complete the exercise.

3. Discuss each item on the worksheet.

Extensions:

1. Use the Dental Scramble Words worksheet as a fun activity. **Answers:** 1. Orthodontist, 2. Toothbrush, 3. Dentist, 4. Plaque, 5. Floss, 6. Caries, 7. Fluoride, 8. Filling, 9. Enamel, 10. Drill.

2. Hold a debate on the topic, "Every tooth is worth $1,000."

3. Compare the cost of dental service with the expense of smoking and beauty care. Use charts, graphs, etc., to share your findings.

WORKSHEET: False Teeth—False Economy

NAME_____

Dental Health/Math Exercise

Concepts to Learn

1. With proper care, our teeth will last a lifetime.
2. Fluoride is an effective preventive measure.
3. The facts of dental economics.

Problem Statement:

Robert is a 20 year old college student currently earning $400 a month. He barely makes enough money to pay for his college expenses. Recently he has been suffering from frequent toothaches, so he went to the dentist, who discovered four small and five large cavities. In addition, he needs a root canal filling, and two gold crowns. To save money, he is considering having all 28 of his teeth removed and getting false teeth. Listed below are the procedures needed and the fees charged by the dentist for the two different plans.

PROCEDURES AND PRICES FOR REPAIRING ROBERT'S TEETH

Examination, X-rays, diagnosis.....	$ 25.00
Each small filling	10.00
Each large filling	30.00
Root canal filling	190.00
Gold crown.....	180.00
Periodontal (gum) Surgery.....	100.00
Scale and clean teeth.....	17.00
TOTAL COST	

PROCEDURES AND PRICES FOR FALSE TEETH

Examination, X-rays, diagnosis.....	$ 25.00
Extraction of teeth (per tooth).....	15.00
Dentures (false teeth).....	400.00
TOTAL COST	

Calculate the cost of each of the two treatment plans. Which is the least expensive plan?

If Robert decides to get false teeth, it would not prevent him from having future dental expenses. He can expect to need a new set of dentures every 15 years, plus every 5 years he will need to have them adjusted (or re-lined) at a cost of $120.00 each time. If Robert lives to be 79, what will it cost him for upkeep on his false teeth for the next 59 years?

If you were Robert would you have your teeth fixed or would you get false teeth? Why?

If Robert had been raised in a community that had fluoridated water, he could have prevented 65 percent of his cavities and would not even be considering false teeth. How much money could Robert save this year if his dental bill was 50 percent lower?

Suppose Robert spent $95.00 for dental work each year for ten years. At the end of 10 years how much did he spend?

Fluoridating water can reduce dental bills by 50 percent. Over ten years how much could he save if fluoride was in the community water?

In Robert's community there are 11,000 people. If each person in the community spent $95.00 each year on dental work, what would be the total amount spent for dental care by the community?

If the dental bills for the entire town were cut in half through fluoridation, how much money could be saved?

It would cost Robert's community $6,400 per year to fluoridate the water supply. How much would it cost each person in the community to have fluoride in their water for one year?

Would the people in this community save enough money on their dental bills to pay for fluoridating their water?

Robert will live to be 79 and his community will be fluoridated at the above cost. What is the cost to Robert for 59 years of fluoridation?

ANSWER SHEET

Dental Health/Math Exercise

Purpose: To provide a dental health exercise that can also be used to emphasize various math concepts.

Concepts to teach:

1. With proper care, our teeth will last a lifetime.
2. Fluoride is an effective preventive measure.
3. The facts of dental economics.

Problem Statement:

Robert is a 20 year old college student currently earning $400 a month. He barely makes enough money to pay for his college expenses. Recently he has been suffering from frequent toothaches, so he went to the dentist, who discovered four small and five large cavities. In addition, he needs a root canal filling, and two gold crowns. To save money, he is considering having all 28 of his teeth removed and getting false teeth. Listed below are the procedures needed and the fees charged by the dentist for the two different plans.

PROCEDURES AND PRICES FOR REPAIRING ROBERT'S TEETH

Examination, X-rays, diagnosis.....	$ 25.00	$ 25.00
Each small filling.....	10.00	40.00
Each large filling.....	30.00	150.00
Root canal filling.....	190.00	190.00
Gold crown.....	180.00	360.00
Periodontal (gum) Surgery.....	100.00	100.00
Scale and clean teeth.....	17.00	17.00
TOTAL COST		$882.00

PROCEDURES AND PRICES FOR FALSE TEETH

Examination, X-rays, diagnosis.....	$ 25.00	$ 25.00
Extraction of teeth (per tooth)....	15.00	420.00
Dentures (false teeth).....	400.00	400.00
TOTAL COST		$845.00

Calculate the cost of each of the two treatment plans. Which is the least expensive plan? False teeth are cheaper by $37.00.

If Robert decides to get false teeth, it would not prevent him from having future dental expenses. He can expect to need a new set of dentures every 15 years, plus every 5 years he will need to have them adjusted (or re-lined) at a cost of $120.00 each time. If Robert lives to be 79, what will it cost him for upkeep on his false teeth for the next 59 years?

During his lifetime, Robert will need at least 3 new sets of false teeth at a cost of $400 for each set. The total cost would be $1,200. Also, he would need to re-line them 8 times at a cost of $120 for each re-linement, for a total of $960. The total cost for maintaining Robert's false teeth for the next 59 years is $2,160.

If Robert had been raised in a community that had fluoridated water, he could have prevented 65 percent of his cavities and would not even be considering false teeth. How much money could Robert save this year if his dental bill was 50 percent lower?

$441.00

Suppose Robert spent $95.00 for dental work each year for ten years. At the end of 10 years how much would he spend?

$950.00

Fluoridating water can reduce dental bills by 50 percent. Over ten years how much could he save if fluoride was in the community water?

$475.00

In Robert's community there are 11,000 people. If each person in the community spent $95.00 each year on dental work, what would be the total amount spent for dental care by that community?

$1,045,000.00

If the dental bills for the entire town were cut in half through fluoridation, how much money could be saved?

$522,500.00

It would cost Robert's community $6,400 per year to fluoridate the water supply. How much would it cost each person in the community to have fluoride in the water for one year?

$.58

Would the people in this community save enough money on their dental bills to pay for fluoridating their water?

Yes

Robert will live to be 79 and his community will be fluoridated at the above cost. What is the cost to Robert for 59 years of fluoridation?

$34.22

WORKSHEET: False Teeth—False Economy

NAME _____

Dental Scramble Words

Unscramble the words, using the clues (the definitions)

1. R O T I T S O D N O H T _____

   A dentist who fits bands on to straighten teeth.

2. S R O B O T H U T H _____

   You put toothpaste on this.

3. T E D S I N T _____

   Person who examines and cares for teeth.

4. L A Q E P U _____

   Sticky, almost invisible film that clings to surface of tooth.

5. S O F L S _____

   String-like material that can help remove trapped food particles and plaque.

6. E C I R A S _____

   Another name for tooth decay.

7. R L O D U E F I _____

   Chemical that helps prevent tooth decay.

8. N I L F I L G _____

   Dentist puts into decayed tooth after cleaning it out.

9. M A N E L E _____

   Outside layer of tooth.

10. L I D R L _____

    Dentist uses this to remove decay.

THE DENTIST COMES TO SCHOOL

5.12 The student will recognize dental professionals as a source of help in solving tooth problems.

Grade Level: K-6

Materials/Preparation:

None

Procedures:

1. Invite a guest to come to class to explain the role of dental professionals in preventing and solving tooth problems. Your guest could be a dentist, dentist's spouse, dental hygienist, or dental assistant. In the following discussion, let us assume that your guest is a dentist, Dr. Sheri Sims.

   A. Don't expect Dr. Sims to teach your entire dental health unit with a 30 or 40 minute presentation. It can't be done and it shouldn't even be attempted.

   B. When making arrangements for a guest to come, give her a specific topic to speak on, such as brushing and flossing, fluoride, sealants, or what a dentist does, then integrate her presentation into your dental health unit.

   C. A few days before Dr. Sims comes to your class spend some time preparing your students for her visit by teaching some dental health. This way Dr. Sims can reinforce the concepts you have already taught.

   D. Perhaps your students are usually better behaved in the morning and their attention span is longer then. If it fits Dr. Sim's schedule, try for a morning presentation.

   E. As a resource the dentist is much too valuable to spend her time showing a film. If she wants to bring a film, ask her to leave it and let you show it later. Explain that she has so much knowledge that it would be a shame not to take full advantage of it while she is in your classroom.

   F. Don't make Dr. Sims wait for the children to clean off their desks or to rearrange furniture, but have everything ready when she arrives, so she can begin her presentation. If more than one class is attending, they should be in your room, ready to go before Dr. Sims arrives. Some teachers have their students ready several minutes before the guest is to arrive, then they keep them entertainted with group singing, storytelling, etc. When Dr. Sim arrives, everything should be ready for her to begin.

G. Make Dr. Sims feel comfortable by being friendly and genuinely pleased that she was willing to come to your class. A healthy handshake and a smile is one of the best ways to make a person feel comfortable. Don't be intimidated by your guest. It is your classroom and you are in charge. Remember, she wouldn't come if she didn't want to be there.

H. Before introducing Dr. Sims, visit with her for a moment and find out how she would like to be introduced. For example, does she want the formal introduction, "This is Dr. Sims," or would she prefer to be called, "Dr. Sheri?" If she doesn't have a preference, introduce her as Dr. Sims. Get her name and title correct.

I. Always introduce your guest. Never ask her to introduce herself or to tell a little about herself. If you want to know more about your guest, then ask her and share the information with your class.

J. Don't expect Dr. Sims to be a disciplinarian. It is your responsibility to keep the class under control by disciplining those students that are restless and beginning to misbehave. This is important if Dr. Sims is to be glad she came.

K. Don't leave Dr. Sims in the classroom by herself. Stay and listen.

L. Give Dr. Sims your undivided attention. Don't correct papers or work on other things while she is speaking. If other classes are invited, then the other teachers should also extend the same courtesy.

M. After thanking Dr. Sims for her presentation, offer to have one or two of your students help her carry her things to her car.

N. Have your students write thank-you notes and send them to Dr. Sims.

With these suggestions to follow, plus your own warm and friendly personality, your guest speaker on dental health will be happy to come again next year.

Extensions:

1. Arrange a field trip to a dental clinic for the purpose of being introduced to the latest innovations in dental equipment and procedures.

IS THE DENTIST IN?

5.12 The student will recognize dental professionals as a source of help in solving tooth problems.

Grade Level: 2-4

Materials/Preparation:

Paper
Scissors
Hole punch
String (18" pieces)

Assign students to bring the name and phone number of their dentist prior to this activity.

Procedures:

1. Indicate that students are to make a telephone that they will use to talk to their dentist. Distribute paper and string. Have them devise their own phone. Assist the students as needed.

2. Role play phoning the dentist to discuss various dental problems.

Extensions:

1. Set up a dental health radio talk show with a real dentist and radio announcer. Have the students phone in to ask their dental health questions.

2. Check with the phone company to see if they will supply two phones in different rooms to use for this activity.

THE DENTIST DOESN'T DO IT ALONE

5.12 The student will recognize dental professionals as a source of help in solving tooth problems.

Grade Level: 2-5

Materials/Preparation:

3 worksheets

Procedures:

1. Begin the activity by asking, "Does the dentist have any helpers?" Identify the following:

   Dental assistant
   Dental hygienist
   Dental laboratory technician

2. Distribute the Dental Assistant worksheet. Read and discuss the information.

3. Distribute the Dental Hygienist worksheet. Read and discuss the information.

4. Distribute the Dental Laboratory Technician worksheet. Read and discuss the information.

5. Conclude the activity by emphasizing that the patient is the dentist's biggest helper in preventing tooth decay.

WORKSHEET: The Dentist Doesn't Do It Alone

Dental Assistants

A dental assistant works in the dentist's office. The assistant can be a man or a woman. Some dentists teach assistants what to do in the office, or there are special schools to attend to learn to be a dental assistant.

The dental assistant helps the dentist while he is working on the patient. A dental assistant also sterilizes all the instruments and gets them ready for the dentist to use. Dental assistants answer the phone, make appointments, greet patients, and prepare them for treatment.

The dental assistant orders all the supplies, and handles the business end of things such as keeping books and records, billing patients, and filling out insurance forms.

Tell what you think the dental assistants pictured below might be doing.

WORKSHEET: The Dentist Doesn't Do It Alone

Dental Hygienist

A dental hygienist is another member of the dental health team. A college degree is required to be a dental hygienist.

People need to know how to brush their teeth properly and how to care for them in other ways. A dental hygienist can teach them to do this and can clean their teeth professionally.

Fluoride and sealants can be applied to teeth by a dental hygienist. The dental hygienist also takes x-rays to see if there are cavities or problems with the bone.

A dental hygienist also talks to parents and teachers about teeth and plans special programs for the classroom.

Tell what you think the dental hygienists pictured below might be doing.

WORKSHEET: The Dentist Doesn't Do It Alone

Dental Laboratory Technicians

A dental technician works in a laboratory making crowns, bridges, and inlays as ordered by the dentist. A dental technician makes false teeth, too.

The work a dental laboratory technician does must be exact. Training comes from special schooling and then assisting in a lab as an apprentice to learn how to do the work. The teeth, or parts of teeth that are made, must fit the patient's mouth exactly and must be the right color to make people happy and to provide for good health and an improved personal appearance.

What do you think the laboratory technician pictured below might be doing?

DENTAL CAREERS

5.13 The student will explore career possibilities in the field of dentistry.

Grade Level: 4-6

Materials/Preparation:

None

Procedures:

1. Invite various dental professionals to visit the classroom to discuss dental careers. Emphasis should be on the need for adequate preparation. Have them share funny, difficult, and rewarding experiences that preceded employment.

2. Have students write brief reports on one type of dental career and indicate why they would or would not want that particular career.

Extensions:

1. Select one or two highly interested students and arrange "A dentist, orthodontist, etc. for a day" experience.

Dental Research Projects

Scientific advances in dentistry make use of the science and technology of many areas of science. The purpose of this section is to provide ideas for science projects and experiments that can be carried out by talented students. Many suggested projects would be very appropriate for science fair projects. These projects can be carried out by individuals or small groups. They can be done at home or in school.

The ideas that follow do not tell what a research project should be. They do give ideas that may trigger a research question in the mind of a student. The discussions include some suggested techniques, but the total experimental procedure must be planned by the student.

The research question selected should be one that can be answered utilizing available equipment and materials. The data collected should reflect a careful detailed analysis of a problem. One observation of an event is never sufficient. Where appropriate, controls should be utilized. A control is a duplicate experiment where everything is the same but the one variable being studied.

Development of the Mouth

There is still much to be learned about the development of teeth. Obtain embryo and stillborn mammals and clean the flesh from the skulls. Make sections of the oral tissues and mount them on slides. (Refer to a text on histological methods.)

Compare stages of development. Investigate differences in hardness of the tooth surfaces as development progresses. Make cross sections of teeth. Observe and describe how the teeth change as they develop.

Comparative Anatomy

Clean the flesh from the skulls of various animals. Remove the lower jaw. Investigate variations in the teeth and how they are attached to the bone.

Section teeth and compare internal structures. Use ultraviolet light to examine growth lines.

Fluorescence of Teeth

Teeth under ultraviolet light glow. Obtain extracted teeth from a dentist. Clean the teeth with tap water and a toothbrush. Compare extracted teeth with live teeth in different people. Use of various tooth powders may influence color.

Another characteristic of teeth is that they will "glow" for a time after being subjected to ultraviolet light. Subjecting extracted teeth for a given period of time (5 minutes) and then measuring how long they glow in a completely darkened room may give some information on the composition of the tooth.

Chewing Efficiency

Not everyone chews with the same degree of efficiency. To investigate this variable, use a food such as peanuts. Chewed food should be spit into a glass of water and strained to determine relative particle sizes. This could be done by weight for various size screens. If a person had a significantly higher number of large pieces, one could look for reasons.

Efficiency could be calculated by computing the percent of peanuts which passed through the screen relative to the total peanuts recovered.

Eff. = weight of peanuts passing screen divided by sum of weights of the chewed peanuts x 100= % of "efficiency"

Bacterial Saliva

Any saliva collected contains bacteria. These bacteria can be cultured in various media. Students can investigate influence of various solutions on growth of bacteria. This could include mouth washes and dentrifices. CAUTION: Before conducting any experiments with oral bacteria, be sure students can practice appropriate sterile techniques.

Collecting Teeth

Dentists will generally save extracted teeth for a student research project. Teeth can be stored in jars containing alcohol. If a tooth is related to a given dental history, then each tooth should be stored in a different labeled jar.

Animal teeth can be extracted with a pair of pliers. Sometimes extraction is facilitated by removing some of the jaw bone with a chisel.

If you want the teeth in the jaw, the cleaning process is as follows: remove as much of the flesh as possible with a knife and scissors. Then place the skull in boiling water for ten minutes and allow to cool. Place the skull in a glass container and cover with a 5% solution of table salt to which a teaspoon of papain has been added. Meat tenderizer will also work.

After 24 hours at 40°C, shake the container thoroughly and pour off the liquid. Rinse or spray off any remaining tissue.

Bleach the skull in a 5% solution of hydrogen peroxide for a day. Then rinse and allow to dry.

Testing Hardness of Teeth

Hardness refers to how easily a material is scratched. The comparative hardness of teeth or dental materials can be determined by scratching them with an old diamond or sapphire phonograph needle. The needle should be attached to a wood or metal surface with super glue. Materials tested can be scraped over the needle. The scratches can be microscopically examined.

Benefits of Fluoride

Immerse one boiled egg in a fluoride mouthrinse solution and let it sit for 24 hours, then place the egg in a vinegar solution of 3 parts vinegar to 1 part water. Use enough to thoroughly cover the egg.

Take a second hard boiled egg (not having the protective coating of fluoride) and place it in a vinegar solution in another cup.

Properly label each cup and leave the eggs in the vinegar solution for 24 hours. Compare the shells of the two eggs.

APPENDICES

APPENDIX I

Glossary of Terms

Abrasion: The wearing down of the teeth due to friction or improper chewing.

Abscess: A collection of pus in the tissues, usually due to infection by bacteria.

Acid: A chemical substance which forms in the mouth from a bacterial reaction. This acid causes decay.

Alveolar bone: The cavity or socket in which the root of the tooth is held by the periodontal membranes.

Amalgam: Alloy usually of silver, tin, and mercury used for filling teeth.

Anterior teeth: Front teeth.

Arch, dental: A term used to designate the upper or lower teeth collectively.

Assistant, Dental: A person who performs various supportive tasks in the dental office to assist the dentist.

Bacteria (germ): A large group of typically one-celled microorganisms, many of which are disease producing.

Bicuspid (premolar): A permanent tooth with two points or cusps.

Bridge: A prosthetic appliance replacing missing teeth, held in place by attachment to adjacent teeth.

Calcium: Metallic basic element of lime essential to the formation and growth of teeth.

Calculus (tartar): A hard deposit of mineral salts from the saliva found on the surface of the teeth.

Carcinogen: Any cancer-producing substance.

Caries (tooth decay): Localized disease process which destroys the structure of a tooth and produces a cavity.

Cariogenic: A substance that has the ability to produce dental caries.

Cavity: Hollow place or hole caused by decay in a tooth.

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Cementum: The bony substance which forms the outer layer of the root of a tooth.

Central incisors: The two front teeth in upper and lower jaw.

Chaw: A golf-ball size wad of leaf or plug tobacco on which the chewer sucks.

Crown: (1) The part of the tooth that is covered with enamel and is normally above the gums. (2) A gold, porcelain, or plastic replacement for the natural crown of the tooth.

Cuspid (canine): An anterior tooth with one point or cusp shaped for tearing food.

Decalcify: To remove calcium salts from bone or teeth.

Decay: To become decomposed, or rot, as a cavity.

Deciduous teeth (primary): The first set of teeth developed by a child, baby teeth, twenty in number.

Dentifrice (toothpaste or powder): Cleansing substance for the teeth, which usually contains fluoride.

Dentin: The hard, dense calcified tissue which forms the body of the tooth underneath the enamel.

Dentistry: That department of the healing arts which is concerned with the teeth, oral cavity, and associated parts including the diagnosis, treatment and prevention of their diseases and the restoration of defective and missing tissue.

Dentures: A set of artificial teeth.

Enamel: The smooth, hard, calcified, outer coating of the teeth. Enamel is the hardest natural substance in the body.

Eruption: The natural passage of a tooth through the gum into the oral cavity.

Extraction: The act of removing a tooth.

Filling: A material such as gold, amalgam, or plastic inserted in a prepared cavity in a tooth.

Floss: A strong thread used to clean areas between the teeth.

Fluoridation: The adjustment of the fluoride content in the public water supply to prevent or reduce tooth decay.

Fluoride: A compound of fluorine, when properly used will reduce decay.

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Gingiva: The gum, or tissue, which covers the alveolar bone of the upper and lower jaw and surrounds the necks of the teeth.

Hygiene, Oral: Cleanliness or proper care of the mouth and teeth.

Hygienist, Dental: A professional that provides certain specified services such as cleaning the teeth, and educating the public in good dental health practices.

Impacted tooth: The condition in which a tooth is embedded in the alveolar bone and/or soft tissue so that its eruption is prevented.

Incisor: Any one of the four front teeth of either upper or lower jaw, shaped for biting and cutting food.

Lateral incisor: Tooth next to the central incisors in both jaws.

Malocclusion: Irregularity of tooth position and poor fitting together of the teeth on closing the jaws.

Mandible: Lower jaw.

Mastication: The act of chewing.

Maxilla: Upper jaw.

Molar: Teeth adapted for grinding, in the back of the jaw.

Nerve of tooth: Nerve fiber found in the pulp which supplies tooth with sensation from central nervous system.

Orthodontic appliance: A device used to guide teeth into proper position.

Partial denture: An appliance to replace less than the full number of teeth in the jaw.

Patient: A person who is undergoing preventive or curative treatment for a disease.

Periodontal disease: Disease affecting the soft tissues (gums), the periodontal fibers holding the teeth in place, or the bone surrounding the teeth.

Periodontal membrane: A layer of tissue made up of tiny fibers which help hold the tooth in its socket.

Permanent teeth: The second set of teeth, 32 in number, or those that follow the primary teeth.

Pit: A small indentation in the crown of a tooth.

Plaque: A thin tenacious filmlike deposit made up of protein substances and microorganisms which adheres to the crown of the tooth.

Prophylaxis: The professional cleaning of teeth by a dentist or a dental hygienist, whereby extraneous materials, including stain, plaque, and calculus, are removed.

Prosthetic appliance: A replacement for missing teeth or tissue; often used in repairing cleft palate, etc.

Protrusion: Projection usually of front upper teeth, a form of malocclusion.

Pulp chamber: The chamber in the center area of the tooth which is filled with blood vessels, nerves and connective tissue.

Quid: A small portion of any smokeless tobacco which is held in the mouth for dipping (snuff) or chewing (leaf or plug).

Root: Part of tooth which is normally beneath the gums and anchors the tooth in the jawbone. It is covered with cementum.

Root canal: Passageway for blood vessels and nerves through the tooth.

Saliva: The clear alkaline secretion from the salivary glands.

Sealant: A plastic-like resin placed on the biting surfaces of back teeth to prevent cavities.

Smokeless tobacco: Chewing tobacco or snuff, used by placing leaf tobacco, plug tobacco, or powdered tobacco in the oral cavity between the cheek and gum.

Snuff dipping: The placing of a pinch of powdered tobacco (sold in cans) between the cheek and gum.

Sodium fluoride: A chemical combination of sodium with fluorine. The active ingredient found in most fluoride toothpastes and mouthrinses.

Space maintainer: Appliance inserted in place of a missing primary tooth to prevent teeth from drifting, until the eruption of a permanent tooth.

Stannous fluoride: A chemical combination of tin and fluorine. The active ingredient found in some fluoride mouthrinses.

Streptococcus mutans: Bacteria found in plaque which produce decay-causing acid from fermentable carbohydrates.

Systemic fluoride: Fluoride which is swallowed and if taken in appropriate amounts daily from birth to age 14, will become part of the developing teeth, resulting in enamel more resistant to decay.

Tartar: The layman's term for calculus.

Topical fluoride: Fluoride which is placed on the teeth in the mouth giving temporary protection from decay to the teeth.

Wisdom tooth: Third permanent molar in each jaw.

X-ray (Radiograph): A film showing images of structures lying within the tooth and bone, used as an aid to diagnosis and treatment.

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APPENDIX II

Curriculum Framework

Program Goal 1.0: To provide a general understanding of what may be found in the mouth.

Topic 1.1: The parts of the mouth.

Objective 1.11: The student will describe the functions of the major parts of the mouth.

Topic 1.2: Organisms that may live in the mouth.

Objective 1.21: The student will infer that plaque is an enemy found in the mouth.

Program Goal 2.0: To develop an understanding of structure and function of teeth.

Topic 2.1: Tooth Development

Objective 2.11: The student will describe the development and function of both primary and permanent teeth.

Program Goal 3.0: To develop an understanding of tooth problems and how to prevent or alleviate these problems.

Topic 3.1: Tooth Decay

Objective 3.11: The student will identify plaque as the major agent of tooth decay.

Objective 3.12: The student will describe the influence plaque has on the teeth.

Topic 3.2: Preventing Decay Problems

Objective 3.21: The student will identify fluoride and sealants as the most effective agents in preventing tooth decay.

Objective 3.22: The student will conclude that nutrition and eating habits may influence tooth decay.

Topic 3.3: Preventing Periodontal Diseases

Objective 3.31: The student will conclude that brushing and flossing are effective in preventing periodontal disease.

Topic 3.4: Smokeless Tobacco

Objective 3.41: The student will infer the effect of smokeless tobacco on oral health.

Topic 3.5: Malocclusions

Objective 3.51: The student will recognize and describe malocclusions.

Topic 3.6: Accidents

Objective 3.61: The student will identify ways of preventing accidental tooth injuries.

Objective 3.62: The student will describe actions to be taken in the event of a tooth injury.

Program Goal 4.0: To put today's dentistry into historical perspective.

Topic 4.1: Dentistry Yesterday, Today, and Tomorrow

Objective 4.11: The student will develop an appreciation for modern dental practices and procedures.

Program Goal 5.0: To develop an understanding of the importance of dental professionals.

Topic 5.1: The role of the Dentist in Solving Tooth Problems.

Objective 5.11: The student will conclude that a dentist can help prevent many future problems.

Objective 5.12: The student will recognize dental professionals as a source of help in solving tooth problems.

Objective 5.13: The student will explore career possiblities in the field of dentistry.

APPENDIX III

Activities by Grade and Objective

Kindergarten

A Tooth For Every Occasion (1.11)
The Plaque Monster (3.11)
Decay Looks Gross (3.12)
Acid, Eggs, And Bones (3.12)
Elephants And Fingers (3.22)
Sugar Display (3.22)
Brushing (3.62)
A Tooth For A Tooth (3.61) (3.62)
The Dentist Comes To School (5.12)

Grade 1

A Tooth For Every Occasion (1.11)
A Mouth For Every Occasion (1.11)
Would You Know A Tooth If You Saw One? (2.11)
The Plaque Monster (3.11)
Decay Looks Gross (3.12)
Acid, Eggs, And Bones (3.12)
Dental Health With Mother Goose (3.21, 3.22)
Elephants And Fingers (3.22)
Sugar Display (3.22)
Brushing (3.31)
A Tooth For A Tooth (3.61) (3.62)
The Dentist Comes to School (5.12)

Grade 2

A Tooth for Every Occasion (1.11)
A Mouth for Every Occasion (1.11)
Dental Tongue Twisters (1.11)
All the Plaque You Ever Wanted to See (1.21)
Would You Know a Tooth If You Saw One? (2.11)
The Plaque Monster (3.11)
A Formula For Decay (3.11)
Decay Looks Gross (3.12)
Acid, Eggs, and Bones (3.12)
Rinse Day Football (3.21)
Dental Health With Mother Goose (3.21, 3.22)
Elephants And Fingers (3.22)
Sugar Display (3.22)
Less Tooth Decay (3.22)
Hidden Sugar (3.22)
Brushing (3.31)
Don't Lean On Me (3.51)
A Tooth For A Tooth (3.61) (3.62)
Tooth Injuries (3.61)
Dental History (4.11)
George's Teeth (4.11)
Visit To The Dentist—Role Play (5.11)
The Dentist Comes To School (5.12)
Is The Dentist In? (5.12)
The Dentist Doesn't Do It Alone (5.12)

Grade 3

Dental Tongue Twisters (1.11)
All The Plaque You Ever Wanted To See (1.21)
The Plaque Monster (3.11)
A Formula For Decay (3.11)
Decay Looks Gross (3.12)
Acid, Eggs, And Bones (3.12)
Rinse Day Football Ball (3.21)
How Fluorides Affect Teeth (3.21)
Tooth Decay Role Play (3.21)
Dental Health With Mother Goose (3.21, 3.22)
Sugar Display (3.22)
Less Tooth Decay (3.22)
Hidden Sugar (3.22)
Grocery Store (3.22)

Less Sugar (3.22)
Brushing (3.31)
Brushing And Flossing (3.31)
Brushing And Flossing Contract (3.31)
Floss Is Boss (3.31)
Floss Contract (3.31)
Don't Lean On Me (3.51)
A Tooth For A Tooth (3.61) (3.62)
Tooth Injuries (3.61)
Dental History (4.11)
George's Teeth (4.11)
Why Toothpaste? (4.11)
Visit To The Dentist—Role Play (5.11)
False Teeth—False Economy (5.11)
The Dentist Comes To School (5.12)
Is The Dentist In? (5.12)
The Dentist Doesn't Do It Alone (5.12)

Grade 4

Dental Tongue Twisters (1.11)
All the Plaque You Ever Wanted To See (1.21)
The Plaque Monster (3.11)
A Formula For Decay (3.11)
Decay Looks Gross (3.12)
Acid, Eggs, And Bones (3.12)
Rinse Day Football (3.21)
How Fluorides Affect Teeth (3.21)
Tooth Decay Role Play (3.21)
Dental Health With Mother Goose (3.21, 3.22)
Sugar Display (3.22)
Less Tooth Decay (3.22)
Hidden Sugar (3.22)
Grocery Store (3.22
Less Sugar (3.22)
The Making Of A Healthy Tooth (3.22)
Brushing And Flossing (3.31)
Brushing And Flossing Contract (3.31)
Floss Is Boss (3.31)
Floss Contract (3.31)
Don't Lean On Me (3.51)
Tooth Injuries (3.61)
Dental History (4.11)
George's Teeth (4.11)
Why Toothpaste? (4.11)
Visit To The Dentist—Role Play (5.11)
False Teeth—False Economy (5.11)
The Dentist Comes To School (5.12)
Is The Dentist In? (5.12)
The Dentist Doesn't Do It Alone (5.12)
Dental Careers (5.13)

Grade 5

Dental Tongue Twisters (1.11)
All The Plaque You Ever Wanted To See (1.21)
The Plaque Monster (3.11)
Decay Looks Gross (3.12)
Acid, Eggs, And Bones (3.12)
How Fluorides Affect Teeth (3.21)
Tooth Decay Role Play (3.21)
Sugar Display (3.22)
Hidden Sugar (3.22)
Grocery Store (3.22)
Less Sugar (3.22)
The Making Of A Healthy Tooth (3.22)
Brushing And Flossing (3.31)
Brushing And Flossing Contract (3.31)
Floss Is Boss (3.31)
Floss Contract (3.31)
Tooth Injuries (3.61)
George's Teeth (4.11)
Why Toothpaste? (4.11)
Visit To The Dentist—Role Play (5.11)
False Teeth—False Economy (5.11)
The Dentist Comes To School (5.12)
The Dentist Doesn't Do It Alone (5.12)
Dental Careers (5.13)

Grade 6

Dental Tongue Twisters (1.11)
All The Plaque You Ever Wanted To See (1.21)
Decay Looks Gross (3.12)
Acid, Eggs, And Bones (3.12)
How Fluorides Affect Teeth (3.21)
Sugar Display (3.22)
Hidden Sugar (3.22)
Grocery Store (3.22)
Less Sugar (3.22)
The Making Of A Healthy Tooth (3.22)
Brushing And Flossing (3.31)
Brushing And Flossing Contract (3.31)
Floss is Boss (3.31)
Floss Contract (3.31)
George's Teeth (4.11)
Why Toothpaste? (4.11)
Visit To The Dentist—Role Play (5.11)
False Teeth—False Economy (5.11)
The Dentist Comes To School (5.12)
Dental Careers (5.13)